December 2, 1957

Paper Trade Journal

- How to Get Improved Cutter and Layboy Operations
- Twelve Different Industrial Trucks Used at One Mill
- How Sawmill Chips are Handled at Crossett Paper
- Anti-Skid Coatings Reduce Shipping Container Damage
- Problems in Controlling Groundwood Pulp Quality

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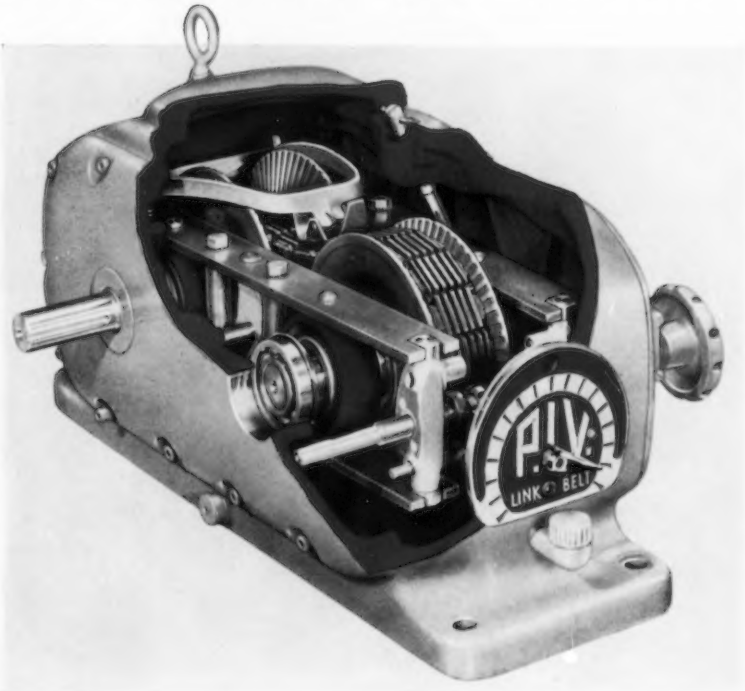

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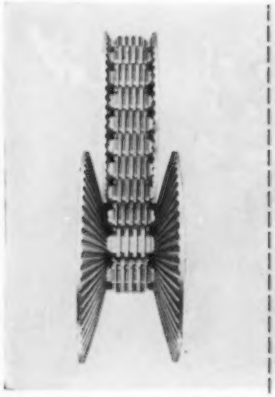
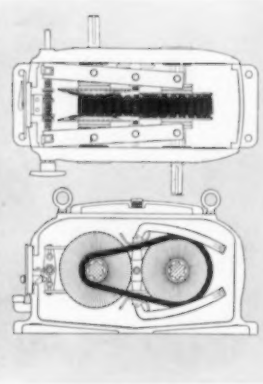
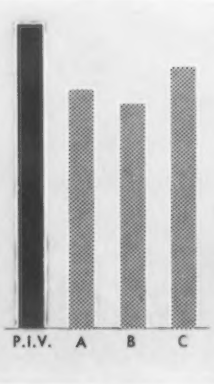


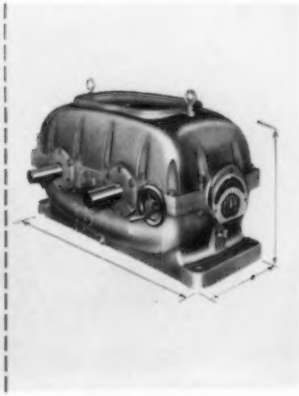
POSITIVE MESH of self tooth-forming chain with grooved wheels assures full-rated hp at output shaft. All-metal construction . . .



PREVENTS SLIPPAGE because the P.I.V. drive chain does not depend on friction and is unaffected by atmospheric conditions.

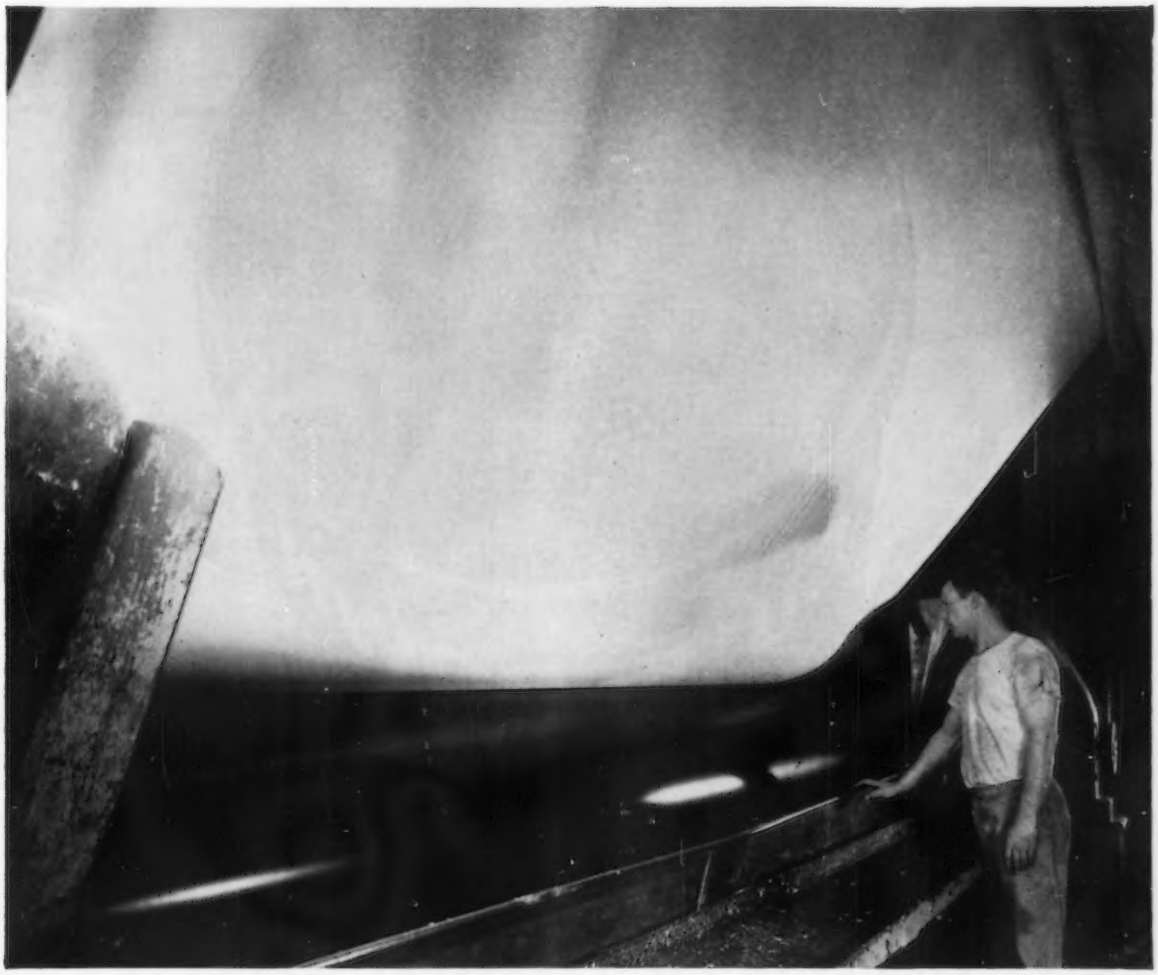


UNMATCHED ACCURACY is demonstrated by this actual comparison of maintained rpm of P.I.V. and three other variable speed drives.



GREATER COMPACTNESS results from short-center arrangement of drive mechanism. Some P.I.V. models save 50% on floor space.

B.F.Goodrich report:



Photograph courtesy Hammermill Paper Co.

B.F.Goodrich size press rolls stand heat, last longer

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B.F.Goodrich engineers will be glad to send you information on the many kinds of rolls B.F.Goodrich makes for the paper industry, or come to your plant to make recommendations. There's no obligation, of course. *B.F.Goodrich Industrial Products Company, Dept. M-226, Akron 18, Ohio.*

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PAPER TRADE JOURNAL

Published Weekly Since 1872

December 2, 1957, *Vol. 141, No. 48*

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REMEMBER THESE DATES . . .

JAN. 23: Western Michigan University's Annual Pulp & Paper Conference, Kalamazoo, Mich.

JAN. 29-31: Canadian Pulp & Paper Assn. Annual Meeting at Mount Royal Hotel, Montreal, Canada.

FEB. 17-22: Paper Week in New York.

Entered as Second Class Matter at the post office at East Stroudsburg, Pa., under Act of Congress of March 3, 1879. Publication Office at Lockwood Trade Journal Co., Inc., 34 North Crystal St., East Stroudsburg, Pa. Printed in U.S.A. Copyright 1957 by Lockwood Trade Journal Co., Inc. **Paper** established Feb. 17, 1899, combined with **Paper Trade Journal** Nov. 16, 1899. **Paper** established Sept. 21, 1910, combined with **Paper Trade Journal** February 19, 1926. All rights to the above titles reserved. Contents of **Paper Trade Journal**, including all articles, illustrations, etc., are copyrighted and may not be reprinted except by permission. Also publishers of **Lockwood's Annual Directory of the Paper and Allied Trades.**

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New Wyandotte chart helps you choose between 50% and 74% caustic soda

Like to make a definite decision whether or not switching from 50% to 74% caustic soda would be profitable for your business?

To make this task easier for you, Wyandotte has devised a unique chart which helps you plot your economic position, and shows you whether switching from 50% to 74% liquid-caustic solutions can benefit you in your operations.

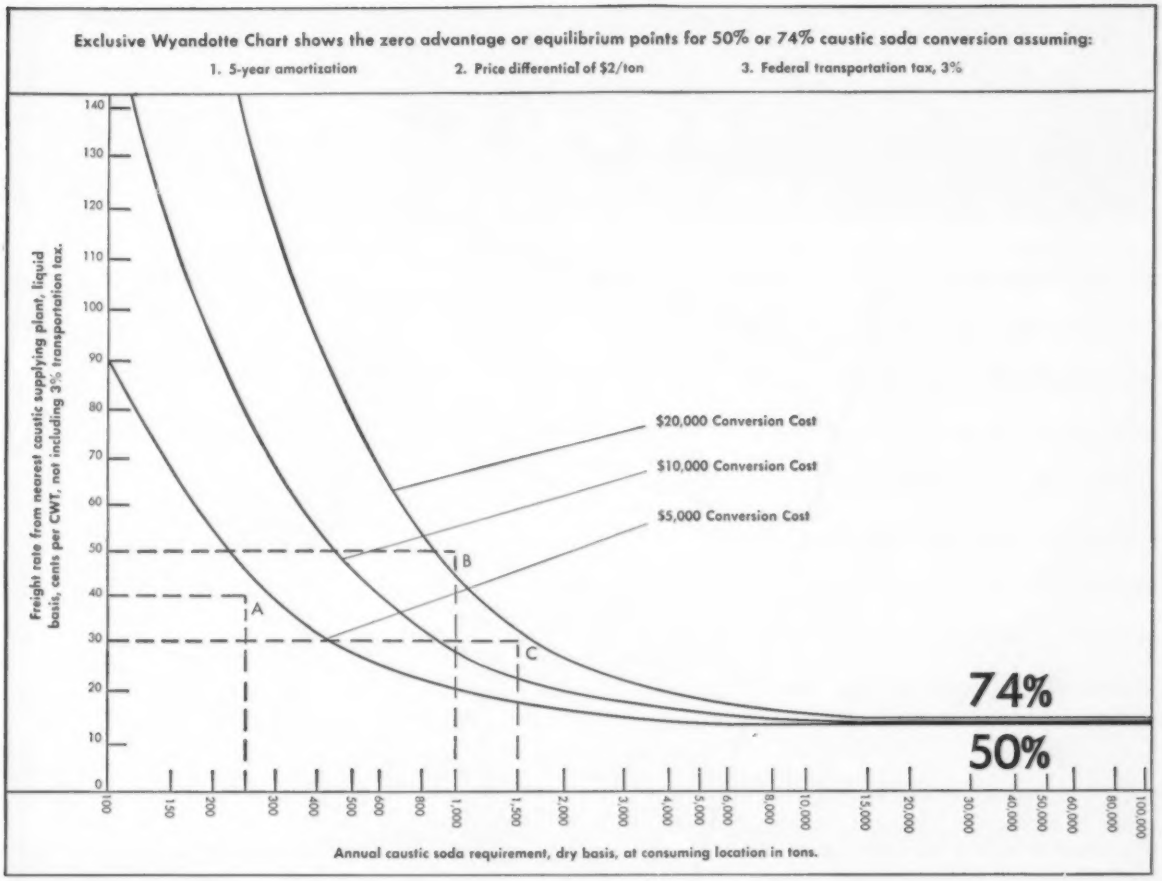
Wyandotte's caustic liquor is loaded while hot. This heat, plus heavy insulation, insures users against solidification.

In choosing, there are many variable factors which you must consider: the cost of concentration; end use of the caustic soda; existing storage and handling facilities; quantity of caustic consumed; plant location.

While there are definite freight savings to be realized from using 74% caustic (less water must be shipped), if the final use of the caustic requires a dilute solution, equipment must be provided to dilute the tank car of 74% liquor. And since the dilution operation results in approximately 70% more total liquid, additional storage space may be needed.

A survey of your operations will reveal the possible savings that may be made by switching to 74% liquid caustic. Even though you may have surveyed operations previously, increased use of caustic or changes in freight rates may well mean you can save money now by switching to 74% liquor . . . it is wise to plan periodic surveys of your caustic requirements.

Our technical service representatives are experienced in solving problems concerning the type of caustic soda to be used, and will gladly aid you in making the necessary economic studies. For further information and help in choosing which is best for your business, get in touch with us today. *Wyandotte Chemicals Corporation, Dept. 565, Wyandotte, Michigan. Offices in principal cities.*



HOW TO USE CHART

EXAMPLE A: Freight from nearest producing point to consuming point is 40 cents per hundredweight. Annual consumption by consuming plant is 250 tons caustic soda, dry basis.

ANSWER: Because Point A lies to the left of the curves, the plant should purchase caustic soda as a 50% liquid.

EXAMPLE B: Freight from nearest producing point to consuming point is 50 cents per hundredweight. Annual consumption by consuming plant is 1000 tons caustic soda, dry basis.

ANSWER: Because Point B lies to the right of the curves, the plant should purchase caustic soda as a 74% liquid, even though additional equipment investment of as much as $20,000 might be found necessary.

EXAMPLE C: Freight from nearest producing point to consuming point is 30 cents per hundredweight. Annual consumption by consuming plant is 1500 tons caustic soda, dry basis.

ANSWER: Because Point C lies between the $10,000 curve and the $20,000 curve, the plant should purchase 50% caustic soda if the additional investment necessary exceeds about $15,000, or should purchase 74% caustic soda if the additional investment is less than about $15,000.

NOTE: The amount of additional investment needed is based primarily on how much of the following items are presently part of the caustic soda unloading, storage and handling facilities at the consuming plant:

1. Storage capacity: A 10,000-gal. tank car of 74% caustic soda produces about 17,000 gals. of 50% liquor.
2. Dilution facilities: Water pump, caustic-soda pump, line-temperature gauges necessary to dilute 74% to 50%.
3. Cooling facilities: The hot 50% caustic soda must be cooled to about 110°F.-120°F. prior to storing the 50%.
4. Contamination: Some consuming plants would need protective linings or materials in the equipment to prevent contamination; thus, all-nickel equipment might be needed in some cases.

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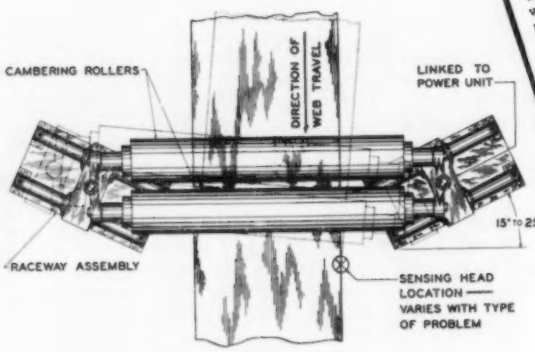
U. S. Patent Issued for "Web Shifting Apparatus"

A simultaneous lateral and swiveling (or canting) movement of a roller or rollers for accomplishing guiding is very definitely a development of this inventor, and to our knowledge was never used in any industry before its conception by the inventor.

We intend to protect our rights under this patent against any unauthorized makers, users, or sellers.


CAMBERING ROLLERS
DIRECTION OF WEB TRAVEL
LINKED TO POWER UNIT
15° to 25°
RACEWAY ASSEMBLY
SENSING HEAD LOCATION — VARIES WITH TYPE OF PROBLEM

FUNCTIONAL PRINCIPLE
FIFE CAMBERING ROLLER METHOD

United States Patent Office

Patented June 25, 1957

2,797,091

1

2,797,091

WEB SHIFTING APPARATUS

Irwin L. Fife, Oklahoma City, Okla.

Application August 5, 1955, Serial No. 526,619

12 Claims. (Cl. 271—2.6)

The present invention relates to apparatus for shifting traveling webs or ribbons of sheet material such as paper, cloth and the like. This application is a continuation-in-part of applicant's co-pending application Serial No. 158,797, filed April 28, 1950, and entitled "Web Shifting Apparatus," now abandoned.

In the web guiding or rolling art, various types of mechanisms have heretofore been provided for longitudinally shifting the unwind shafts of web carrying rolls, so that the traveling web may be evenly rolled upon other rolls, or so that it will travel in a comparatively straight path through other mechanism such as slitting or trimming equipment.

The present invention is not designed to supplant such mechanism for shifting the rolls of web material. Instead, it is designed as a means for shifting the web itself, as it proceeds in its travel.

In many operations where web material is handled, the web must travel considerable distances before it is finally re-rolled, or other disposition of the web is finally provided for, and during its travel, one or more mechanical operations on the web may take place. For instance, a printing or a slitting operation may be performed on the roll many feet or yards from the roll of source, or the unwind roll. It is therefore imperative that the traveling web be properly guided at or adjacent the operational points in the web's travel. In cases wherein the operation on the web takes place at a point remote from the unwind roll, the position of the web at the place of operation cannot be accurately controlled by the shifting of the unwind roll.

In operations wherein a web is compelled to travel a lengthy path, there are several contingencies which might cause the web to deviate from a perfectly straight line of travel. A slackening of the web's tautness might well cause it to shift laterally. Such slackening might be caused from bearing wear in the web supporting roll shafts, or in web material stretch. A slight variation in web thickness on either side of its longitudinal center line might well cause the web to creep towards the thicker or tighter side of the web.

The mechanism of the present invention generally comprises a web guiding apparatus that will properly shift the traveling web at or adjacent any point in its travel, where accurate alignment is crucial or necessary. In most cases, this crucial point or points usually lies remote from the unwind roll. The present mechanism is not only designed to shift the traveling web laterally, but is also designed to alter the direction of travel of the web axis or edge, so that its tendency to creep in a given direction will be combatted or controlled.

The principal object of the present invention is to provide apparatus for mounting the shaft of a web guiding roller or rollers in such a manner that the camber of such roller is altered or canted simultaneously with the longitudinal movement of the roller shaft, and in such a manner that this swinging movement of the shaft in a horizontal plane takes place in direct proportion to the longitudinal movement of the shaft.

The result is that the shaft is brought into a static position of perfect alignment with a feeler station. When such a condition is once obtained, then the shaft remains static so far as any shifting movement is concerned, and the web is then traveling in a desired direction and at the required lateral position. The shaft position remains static until some mis-alignment of the web is caused by a force outside of the shift control mechanism. Such outside mis-aligning forces may include those mentioned hereinabove, as well as a change in speed of travel; or mis-guiding at a point ahead of the "feeler" station.

Another object of the invention is to provide a roll shaft mounting mechanism for the purpose described, which is positive in action and simple in construction.

An additional object is to provide a roll shaft mounting and shifting mechanism which will not frequently run out of its shifting capacity. The cam action of the present mechanism prevents the shaft from eventually being completely consumed of its capacity from present adjustment.

A further object is to provide a mechanism of the class which is simple to install, and when once installed requires no frequent or current adjustment.

Other objects will be apparent from the following description when taken in conjunction with the accompanying sheets of drawings, wherein:

In the drawings:

Figure 1 is a perspective view of the roll shifting mechanism, a traveling web being shown in dotted lines.

Figure 2 is a plan view, the solid lines showing the rollers shifted longitudinally to the right to their permitted travel, and the dotted lines showing as they would appear when at the left.

Figure 3 is a top view showing the rollers in intermediate position, the dotted lines showing the possible variation in the positioning of the guide units.

Figure 4 is a vertical sectional view taken along the line 4—4 of Fig. 2, and

Figure 5 is a fragmentary vertical sectional view partially along the line 5—5 of Fig. 4.

Referring to the drawings in which

A indicates, as a whole, a base or frame. The character B indicates one end of the frame, and one of the guiding unit for one end of the rollers, as a whole, a complementary unit for the other end of the rollers, as a whole, and

D indicates a traveling sheet of material to be guided in its travel by the present invention.

The roll carrying frame A comprises two substantially identical end members (Fig. 1) comprising a base portion 5 extending upwardly from the base, and end members 5 and 6, respectively. Cross members 6 are provided with bearing pins 8 respectively, which pins as will be described, front end portions in horizontal alignment with the ends of a horizontal cylindrical guide roller 9.

The upper ends of the members 4 are perforated to receive and retain the opposite ends of a cylindrical guide roller 10. The roller 10 is held in place by suitable set screws 12 and 12

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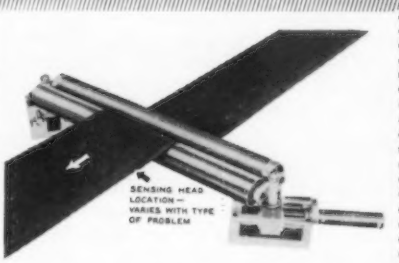
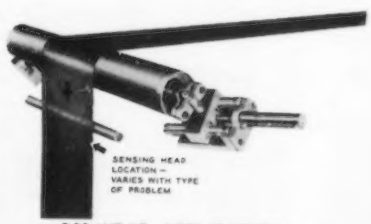
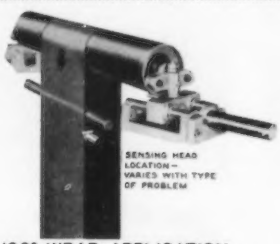


S-WRAP APPLICATION

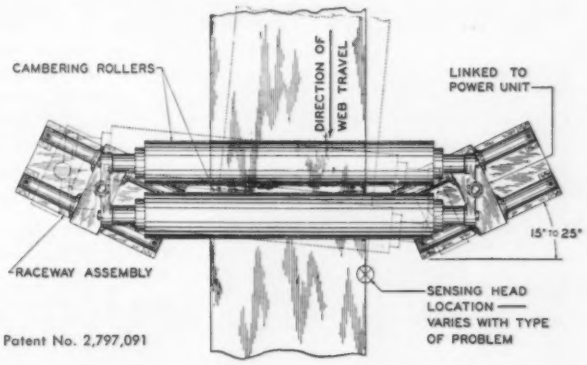


90°-WRAP APPLICATION



180°-WRAP APPLICATION

The FIFE Cambering Roller method is based on the proven principle of applying a lateral corrective movement simultaneously with a canting or swiveling action. The lateral movement positions the material immediately, while the swiveling holds the correction and prevents the same error from recurring.



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FIFE CAMBERING ROLLER METHOD

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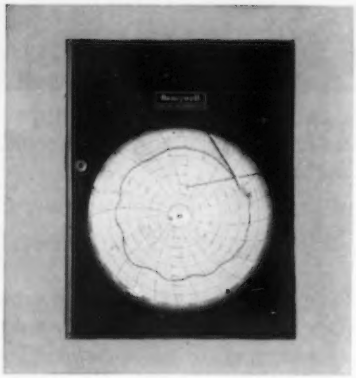

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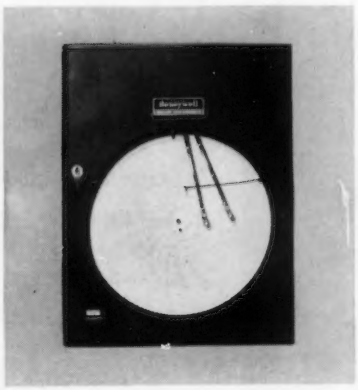
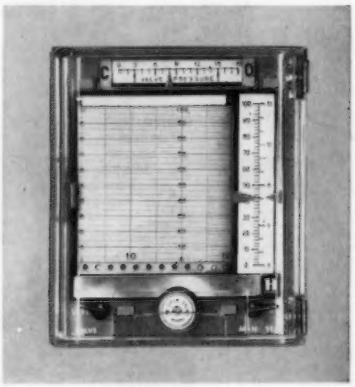
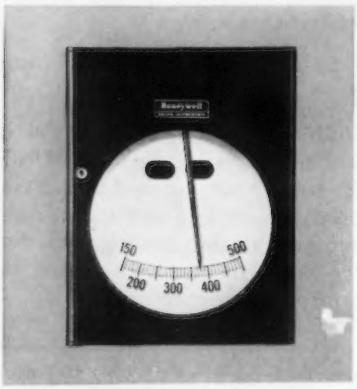


Liquid Level Recorder—Multi-pen model, supplied with combinations of various types of actuating elements.



Tel-O-Set Miniature Instruments — Recorder has automatic-manual unit, remote set point adjustment, and vertical indicating scale. Controller is easily mounted at back of recorder.



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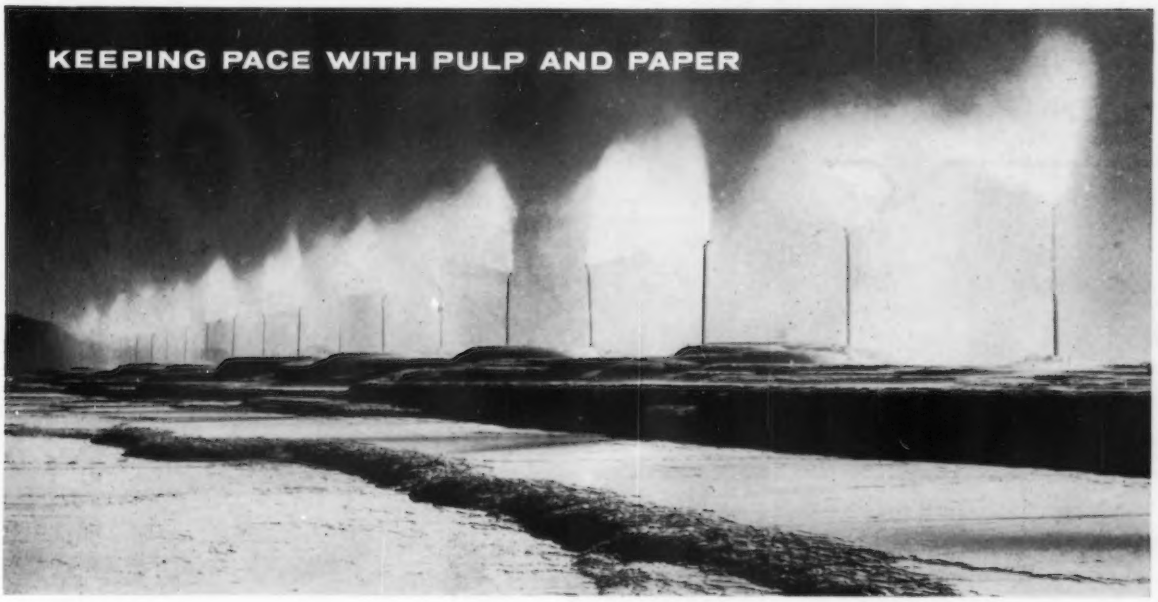
H HONEYWELL *First in Controls*

Spraying Glauber's Salt at Searles Lake, vast natural source of Salt Cake



World Leadership in SALT CAKE

You can count on TRONA to supply your expanded kraft production needs for high purity Sodium Sulphate and Sodium Chlorate. TRONA is basic in both. Salt Cake, from the rich natural brines of Searles Lake, is keeping ahead of production curves wherever high quality kraft paper is produced.

If your interest lies in the SOLVAY high-stage chlorine dioxide pulp bleaching process, you can depend on TRONA* Sodium Chlorate from our large electrochemical facilities at Henderson, Nevada.

Expanded Production of SODIUM CHLORATE

For '58—A New Sodium Chlorate Plant at Aberdeen, Mississippi.

Looking to the future, AP&CC is building a new $5 million Sodium Chlorate plant, with initial production of 15,000 tons per year, at Aberdeen, Mississippi, to serve the expanding Southern pulp industry. When completed in mid-1958, this plant will mark the emergence of American Potash & Chemical Corporation as the largest producer of $NaClO_3$ in the Western Hemisphere.

Electrolytic cells at Henderson

TRONA®

American Potash & Chemical Corporation

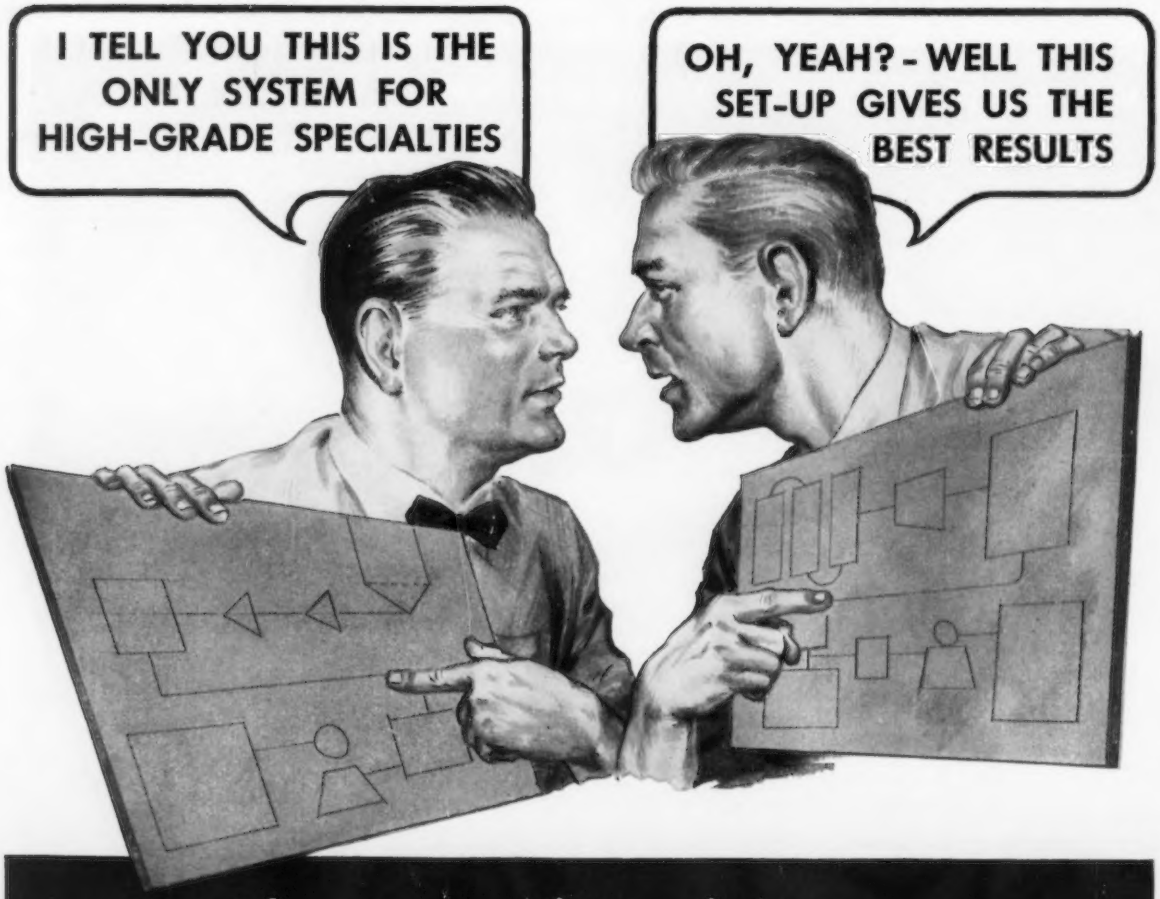
3030 West Sixth Street, Los Angeles 54, California

LOS ANGELES • NEW YORK • ATLANTA • SAN FRANCISCO • PORTLAND (Ore.)

Export Division: 99 Park Avenue, New York 16, New York

*Trademark AP & CC

Producers of: BORAX • POTASH • SODA ASH • SALT CAKE • LITHIUM • BROMINE • CHLORATES PERCHLORATES • MANGANESE DIOXIDE and a diversified line of specialized agricultural and refrigerant chemicals.



But there's one thing they agree on...

YOU CAN DO IT BETTER with E.D. **Jones**

A flow-chart will get you an argument almost anywhere, any time, because different systems have their own partisans — even when the end product is the same. Maybe you wouldn't agree with either of these superintendents.

But on one point you'll find more and more agreement: whatever the system, Jones equipment belongs in it — for better performance, better sheet qualities and over-all operating efficiency and economy.

Only Jones offers a complete range of top-quality stock preparation machinery . . . pulpers, beaters, disc and conical refiners, screens. So you can always count on Jones for unbiased recommendations for any system — and top quality equipment to meet *your* requirements.

Ask your E.D. Jones *man first...*

E. D. JONES & SONS COMPANY
Pittsfield, Massachusetts
BUILDERS OF QUALITY STOCK PREPARATION MACHINERY

In Canada:
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Export Agents:
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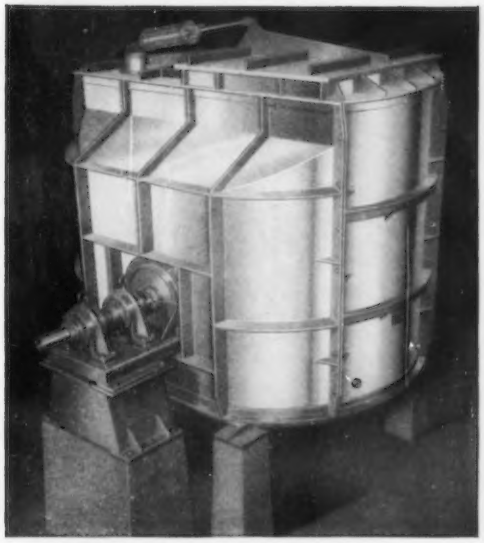
New York 20, N. Y.

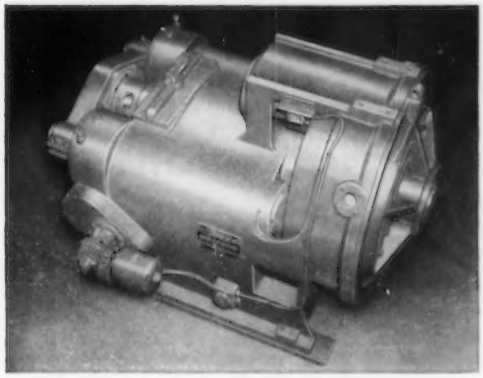
Foreign Licensees: **FRANCE, Batignolles-Chatillon • SPAIN, Gabilondo**

E.D. Jones HI-LO PULPER



Engineered to eliminate the compromise imposed by conventional single-rotor pulpers between maximum circulation and complete defibering, the HI-LO employs two separately powered rotors to provide maximum pulping *and* complete defibering, with significant savings in time and power. For details, ask for Bulletin EDJ-1063.

E.D. Jones DOUBLE-D REFINER WITH DOUBLE EQUA-FLO EFFECT



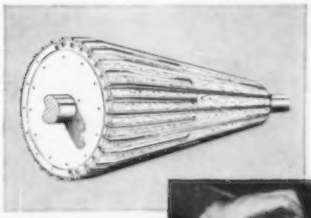
The only unit of its kind with *two stages of refining* in one machine, the Jones Double-D can actually do twice the work of conventional refiners because it has double the refining area — 2200 square inches in the 42″ model; produces stock of equal or better quality at a considerable saving in operating cost. Ask for Bulletin EDJ-1083.

E.D. Jones ROYAL JORDAN

Like all Jones Jordans, the Royal incorporates exclusive Jones features developed in more than a century of service to paper mills. In addition, the Royal, a war-born unit developed originally to process nitrocellulose has some special features worth investigating. Ask your Jones representative or write for Bulletin EDJ-1007B.

TIME FOR REPLACEMENT?

E.D. Jones® Adapta-Plug



Strongest plug design yet developed, this new completely bandless Jordan plug is easiest to strip and fill. New, improved design holds bars firmly in place, eliminates hazards of slot wear and corrosion. Available in solid plug — or sleeve form for easy conversion of old worn plugs. Write for Bulletin EDJ-1094.

E.D. Jones® FULBAR SHELL FILLINGS

A complete one-piece assembly, made to fit the shell body of any Jordan. No keys or wedges. Fulbar rigidity and one-piece construction compensate for inequalities in old Jordan shells — save hours of installation time. Many other new advantages make this the ideal shell filling. Write for Bulletin EDJ-1094 and names of satisfied users.

E. D. JONES & SONS COMPANY
Pittsfield, Massachusetts

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For Longer Service

. . . You can't beat HAMILTON Felts

While the weather's cold,
this jolly snowman looks as though
he'll be greeting passers-by all winter.
But appearances are deceiving . . .
for, on the first mild day
he'll melt away.

In buying felts, too,
physical appearances can be deceiving.
But—since 1858, paper makers have found
that Hamilton Felts give the longest,
high-quality service life. This means that
—with Hamilton Felts your machines can run
faster—with fewer stops, less broke.

Your Hamilton Felt Service Salesman will
suggest the proper felt for your operation
from our more than 300 standard, proven
styles—or design a variation to solve
your specific problem.

YOU CAN'T BEAT
Hamilton
FELTS

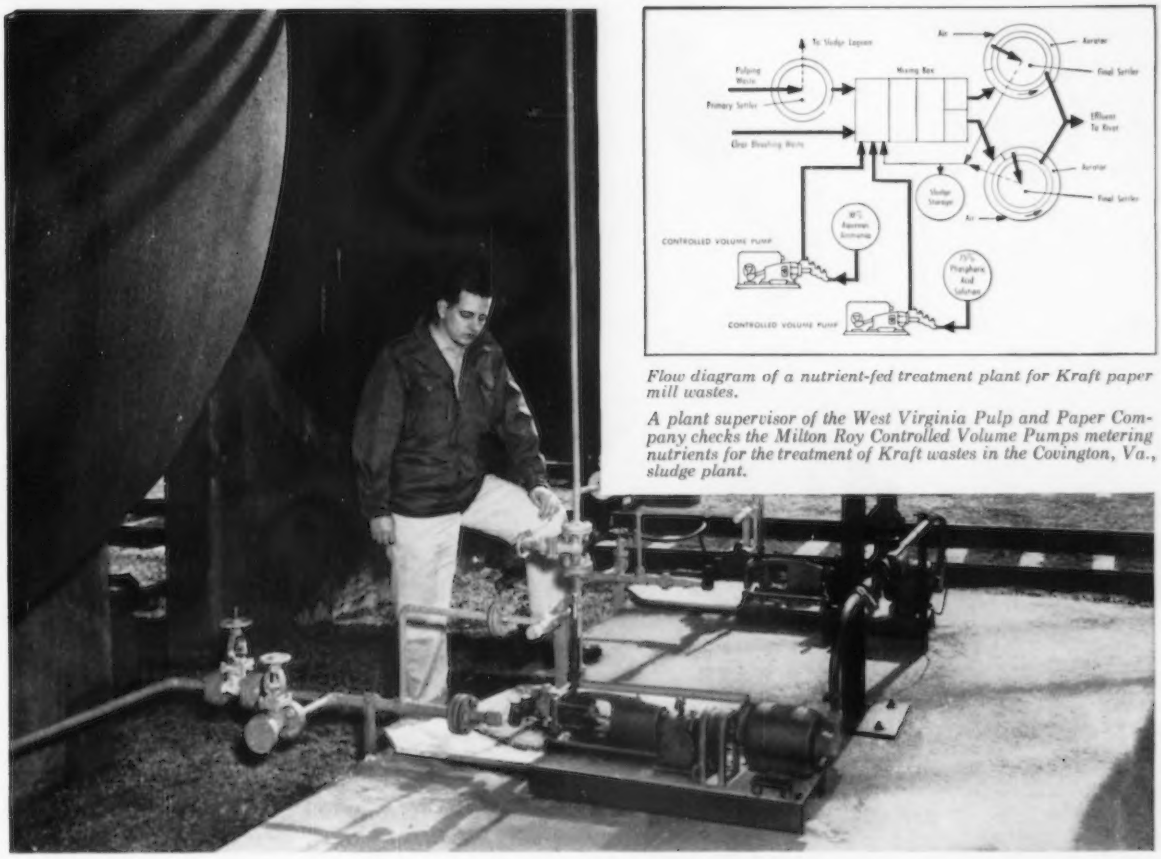
FREE! A Cap like mine

for your son, daughter, nephew, grandchild

HAM FELTZ says:

"Just write me on your company's letterhead at the address below and I'll be happy to send you a paper-maker's cap just like mine. No obligation. The cap is adjustable—fits any head size, and carries a SAFETY SLOGAN. Supply is limited. Write me today."

SHULER & BENNINGHOFEN, HAMILTON, OHIO



Flow diagram of a nutrient-fed treatment plant for Kraft paper mill wastes.

A plant supervisor of the West Virginia Pulp and Paper Company checks the Milton Roy Controlled Volume Pumps metering nutrients for the treatment of Kraft wastes in the Covington, Va., sludge plant.

Pollution problems reduced... with help of nutrients fed by Controlled Volume Pumps

Pollution problems are being reduced by West Virginia Pulp and Paper Company at its Covington, Va., sludge plant . . . by successfully treating Kraft paper mill wastes economically. As part of the treating process, two Milton Roy Controlled Volume Pumps are feeding nutrients to sustain the biological life which converts the wastes to substances that are not harmful to fish or game.

One pump accurately controls and meters a solution of 30% aqueous ammonia at the required maximum rate of 30 gallons per hour . . . a second pump handles a 75% solution of phosphoric acid at the maximum required rate of 3 gallons per hour. Actual flow rates are manually adjusted as laboratory tests indicate changes in the nutrient demands of the sludge.

You too can profitably apply Controlled Volume Pumps in your water treating and paper making operations. Write for Bulletins 455 and 953. Milton Roy Company, *Manufacturing Engineers*, 1300 East Mermaid Lane, Philadelphia 18, Pa.

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THE CASE OF THE PAPER VANDALS

The coating superintendent threw up his hands! He'd never seen a test run so vandalized by the dirty work of bacteria and foreign matter in the casein.

Acting fast he called in a Borden paper specialist. What a man! He quickly cleaned up the case by putting Borden's FF-30 Casein to work. Why FF-30? Because it's the casein that's meticulously blended, screened and processed so that you get a clean, *uniform* product from shipment to shipment.

Mr. Coating Superintendent also found that each batch of FF-30 is tested by Borden for solubility, viscosity and adhesive strength. It has excellent leveling and flow properties. In production it presents no dispersion problems. And it eliminates foam, pinholes, fisheyes and other blemishes—assuring a perfect surface for printing.

If you have a paper coating problem to be solved, call on a Borden expert. He solves the toughest ones with a wide range of caseins and caseinates . . . plus Borden's 50 years of experience in the paper-coating industry. For free bulletin titled, "The Preparation of Custom-made Casein for Industrial Applications," write The Borden Company, Chemical Division, Casein Dept. PTJ-67, 350 Madison Avenue, New York 17, N. Y.

EST 1957 ©T.B.C. IF IT'S A *Borden* ©T.B.C. *Chemical* IT'S GOT TO BE GOOD!

1958 Outlook Said Less Bright

An air of mild pessimism now pervades the utterances of most of the professional business forecasters. The sum of their pronouncements seems to be that general business in the first half of 1958 will be off slightly from the last half of this year.

General Business In November

Everyone is closely watching the indexes of business activity these days. Here are some early November trends—Department store sales, seasonally up—Steel production, off—Freight carloadings, off—Passenger cars and trucks, up—Utility power generation, up.

Mid-Month on Paper and Board

For the first half of November the paper mill operating rate was close to 91% of capacity and the board mills were at 94%.

Pulp Imports Picture Varies

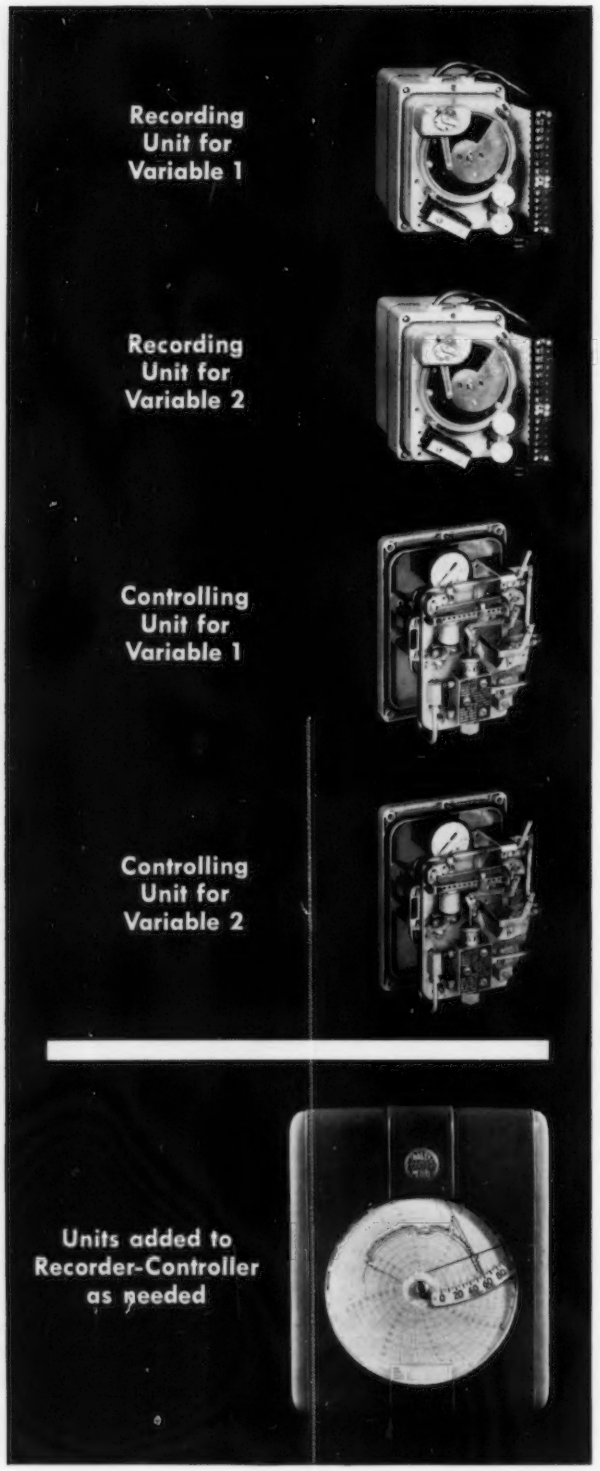
Imports of market pulp in September were off 11% from a year ago. For nine months the decline was 8%. Imports from Europe were responsible for most of the drop, being off 40% for the two Septembers and 34% for the nine-month periods. Imports from Canada were up 4% in September over the same month in 1956, while the nine-month period showed a decline of 2.6%. However, if "captive" pulp is excluded, the decline was less than one-tenth of 1% for the year to date.

Paper and Board Prices

There was little change in paper and board prices in October. The U. S. Department of Labor index for Pulp and Allied products prices shows a 0.6% increase over September and 2.2% over October a year ago. Notable among individual items reported are rises for certain grades of folding and set-up board and for multiwall shipping sacks.

Sept. Paper and Board at a Glance

Here are some fast figures for September paper and board production as compared with same month last year. Newsprint up 2%, Fine Papers off 4%, Machine Coateds off 3%, Uncoated Groundwoods off 19%, Book off 10%, Coarse off 5%, Sanitary Tissue up 4%, Other Tissue up 8.5%, Containerboard up 6%, Folding up 13%, Special Food up 10%, Set-up off 8%, Building Paper up 4%, Building Boards up 5%.


Recording Unit for Variable 1
Recording Unit for Variable 2
Controlling Unit for Variable 1
Controlling Unit for Variable 2
Units added to Recorder-Controller as needed

Bailey Recorder is key to "step-by-step" automation

When you are pioneering a new process and don't know all the answers, complete automation is seldom practical. The first step is to identify your variables and measure them. Nothing does this job better than a Bailey Recorder. One instrument can record any four variables that can be converted to electric *or* pneumatic signals.

Once you get a better understanding of the variables in your process, you will want to add controls and feed back your measurements. Here's where the versatility of the Bailey Recorder comes into play. For the same Bailey instrument you use to record variables is designed to accommodate plug-in control units.

When you use a Bailey Recorder, you can build your instrumentation along with your process. At the start, you use only the plug-in units for recording. Then you add plug-in controls as you see the need for them.

For the complete story of how you can use a Bailey Recorder for step-by-step automation, see your Bailey Engineer. G-42-1

Instruments and controls for power and process

BAILEY METER COMPANY

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In Canada—Bailey Meter Company Limited, Montreal

BAILEY METERS

These screw-type conveyors, made of Armco 18-12 Mo Stainless Steel, can be expected to provide long service life with a minimum of maintenance. This type of conveyor is installed at the Containerboard and Kraft Paper Division of the Continental Can Company, Inc., Hodge, Louisiana.

Continental Can Company

Chooses Armco Stainless Steel for Corrosion Resistance

When you order equipment that needs outstanding corrosion resistance, you can't specify anything better than stainless steel. This is why engineers at the Containerboard and Kraft Paper Division of the Continental Can Company, Inc., chose Armco 18-12 Mo Type 316 Stainless Steel for an extensive network of screw-type conveyors in the company's Hodge, Louisiana, plant.

Molybdenum in Armco 18-12 Mo Stainless Steel provides superior corrosion resistance to a wide variety of chemical and corrosive products.

Other Advantages

Besides its excellent corrosion resistance, Armco 18-12 Mo Stainless Steel has the resistance to abrasion needed for applications such as screw-type conveyors. These properties mean longer operating life.

For more information on this and other types of Armco Stainless Steel, including the extra-low-carbon grades, just write us at the address below. Or ask your equipment fabricator to get in touch with us about your problems.

ARMCO STEEL CORPORATION

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Coming soon... More H_2O_2 for a Growing Industry

A new Shell Chemical plant—soon to be on stream at Norco, Louisiana—will help fill the requirements of the rapidly expanding H_2O_2 market. This important new source represents a considerable increase in the national capacity, timed to coincide with expanding developments in hydrogen peroxide chemistry.

In addition to its time-honored application as a textile and pulp bleach, H_2O_2 is finding increasing uses in chemical oxidation, epoxidation and as a chemical intermediate.

To assist you in using hydrogen peroxide, Shell Chemical offers to share its technical experience. Laboratory facilities and a field staff are at your disposal. As a major consumer of hydrogen peroxide, Shell Chemical also can assist you with storage and handling problems.

Your Shell Chemical representative will be glad to consult with you on your H_2O_2 problems. Write to:

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Atlanta • Boston • Chicago • Cleveland • Detroit • Houston • Los Angeles • Newark • New York • San Francisco • St. Louis
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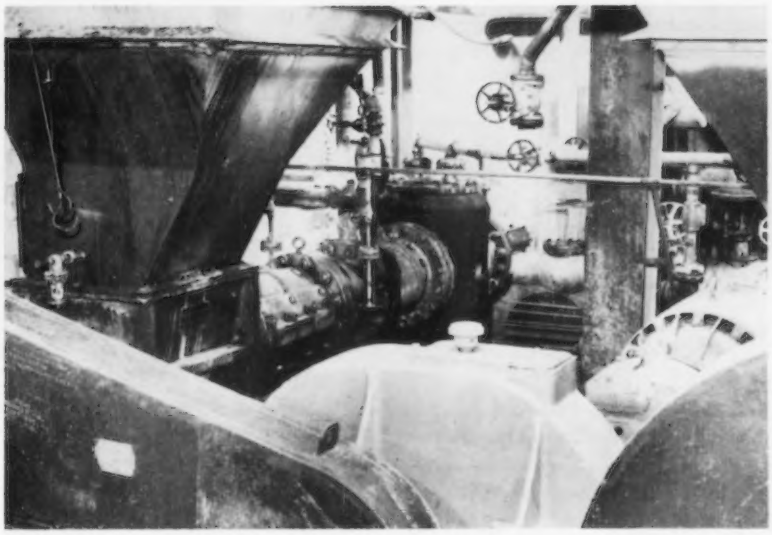

Hopper of new Pandia continuous digester at Camas, one of the first on kraft.

CZ Installs 100-ton Digester

A 100-ton daily capacity Pandia continuous digester, the first of its kind in Crown Zellerbach's western mills, was started up at Camas, Wash. in late summer. Operating as part of the kraft mill, the Pandia unit feeds into the mill's pulp supply system.

"We're still feeling our way," reports L. D. McGlothlin, kraft mill superintendent. "The continuous digester's pulp seems to have good forming characteristics and paper produced from it meets all quality standards." The summer and fall cutback on kraft production, plus mechanical difficulties encountered in the shakedown period have kept the continuous digester's production below the limits of its full capacity.

The new Pandia unit, manufactured by Black-Clawson, consists of four 36-foot long horizontal cylinders, placed one above the other.

In installing the digester, Crown Zellerbach engineers retained sufficient room for two additional horizontal cylinders, should an increase in capacity be required at a later time.

St. Croix Starts New High-Speed Machine

The St. Croix Paper Co.'s new high-speed newsprint machine has gone into production at Woodlands, Maine, bringing to a conclusion the corporation's $14 million expansion program.

The contract for the new machine was signed in October 1955, and the cornerstone was laid June 12, 1956. The machine has a wire width of 206 inches and is designed ultimately to reach a speed of 2500 feet a minute.

Besides this machine, the company's extensive expansion program involves new pulp producing facilities and a new power plant to furnish power for the extra production.

Increased production of pulp has been provided for the new machine by the building of a completely new groundwood pulp mill. Wood is supplied to the mill by a new rubber belt conveyor, 325 feet long, running from the present wood room to the block tank of the new mill.

Increased sulphite production has been provided by modernization of the present sulphite mill. Acid production has been increased by the installation of two new sulphur melters, a sulphur burner and a 200-ton water chiller.

Digester capacity has been increased from 70 to 120 tons per day by installation of an improved digester circulating system and a gas relief system, including a two-unit gas cooler and a 39-foot recovery tower.

Additional power is provided by a new steam plant housing a new boiler plant and a turbine-generating unit.

Kimberly-Clark Buys 35% of Irving

Kimberly-Clark Corp. has announced the purchase of 35 per cent of the capital stock of Irving Pulp and Paper Ltd., St. John, New Brunswick, for $8,400,000 in Canadian funds.

The Canadian firm operates a sulphite pulp mill with an annual capacity of 75,000 tons, a sawmill and timberlands.

Kimberly-Clark will purchase a portion of its pulp requirements from Irving, and will provide technical management services, according to John R. Kimberly, president and board chairman.

Monarch Mill Resumes Operation

The Monarch Division book paper mill of Allied Paper Corp., Kalamazoo, Mich., which was closed down last February, started up again late in November. The move will place the entire Allied plant in Kalamazoo on full production.

The mill operates two paper machines, a waste paper conversion mill and finishing department.

After the book mill was closed last February during a slump in demand for fine papers, Allied gave considerable study to converting the mill to the manufacture of newsprint, but the plan was found impractical after test runs.

Robert E. O'Connor

Appointed APPA Executive Secretary

The executive committee and board of governors of the American Paper and Pulp Assn. at its October meeting formally appointed Robert E. O'Connor executive secretary of the association, succeeding E. W. Tinker who died August 31.

Mr. O'Connor, who is rounding out his tenth year of service with the association, began his employment as a member of the Industrial Relations Department and subsequently served as secretary of a number of the association's committees concerned with a wide variety of industry interests. For the past three and a half years he had served as assistant executive secretary, working closely with Mr. Tinker in the administration of the association's affairs.

Tyrone Electricians Vote for IBEW

The results of a recent National Labor Relations Board election at the Tyrone, Pa. mill of the West Virginia Pulp and Paper Co. held to determine if the International Brotherhood of Electrical Workers (AFL-CIO) were bargaining agents for 21 electrical Westvaco employees, were 13 votes for the union, 8 votes against the union. Election results which bring a union to the Tyrone paper mill for the first time in its history in no way affect the rest of the mill employees, according to J. Lynne Ferner, division manager. I.B.E.W. will represent 21 Tyrone electrical employees.

K-C Milford Mill Ahead of Schedule

The new tissue mill of Kimberly-Clark Corp. at New Milford, Conn. is proceeding ahead of schedule. It is now anticipated that one of the machines and some converting equipment will go into production next March.

Queries Mt. Tom Mill

The mayor of Northampton, Mass. has queried the Mount Tom Development Corp. for information on the reopening of the pulp mill at nearby Mount Tom which the corporation took over from Doeskin when the plant closed last spring.

Negotiations were completed by the corporation some months ago, the mayor said, but as yet no action has been taken about reopening plans. The mayor was a prime factor in getting the negotiations underway and now he feels that claims made by the corporation are a bit late in going into practice.

The corporation said the plant would open again shortly after the first of next year, but as yet there are no signs at the plant which point to a January opening. No machinery has been moved in and no repairs made which are noticeable.

The mayor said he hopes the situation will be made clear by the corporation soon.

Consolidated to Aid Forest Land Owners

Forest management assistance to private forest land owners will be available from Consolidated Water Power & Paper Co., it has been announced by E. B. Hurst, manager of timberlands.

The offer of assistance was made by the company in a recent letter to 400 pulpwood contractors who are currently supplying hardwood requirements for the paper company. Company foresters who have made studies on cutting techniques in company hardwood stands will assist these land owners in this phase of forest management.

Paper and Board Production

According to the American Paper and Pulp Assn., the ratio of the United States production to mill capacity for the week ending November 16, 1957, was 91.7 per cent compared with 89.7 per cent revised for the preceding week. The ratio was 97.3 per cent for the corresponding week a year ago. Mills producing newsprint exclusively are not included.

The paperboard production ratio for the week ending November 16, 1957, was 94 per cent, compared with 94 per cent for the preceding week and 95 per cent for the corresponding week last year.

(Detailed statistics on page 56)

WMU Sets Date for P&P Conference

Western Michigan University, Kalamazoo, has set January 23 as the date for the second annual Pulp and Paper Conference to be held in the university's paper industry laboratories. Plans are now being drafted for the conference. Theme of this year's conference will be "Some Modern Methods of Pulp Manufacture." The conference is scheduled to coincide with the Annual Papermakers Night, which is sponsored by local paper industry groups.

Westvoco Rebuilding No. 5

A rebuild of No. 5 machine at the Luke mill of West Virginia Pulp and Paper Co. started November 25. The job is expected to take six weeks to complete since the machine will be dismantled to its foundation and re-erected.

Newsprint Down in October

Production of newsprint in North America during October 1957 amounted to 695,477 tons and was 5.5 per cent under the all-time October peak attained in 1956. Shipments totaled 689,767 tons in October 1957 and were 5.7 per cent below shipments in the corresponding month of last year. According to the Newsprint Service Bureau, output in the United States was 146,799 tons and shipments were 145,330 tons and respective decreases from October 1956 amounted to 4.7 per cent and 5.3 per cent. Canadian production amounted to 548,678 tons while shipments totaled 544,437 tons and declines from the year ago levels were 5.3 per cent and 5.9 per cent respectively.

The record 1,546,829 tons turned out by United States mills through the end of October this year was 111,247 tons or 7.7 per cent greater than in the first ten months of 1956. Output in Canada of 5,456,334 tons also constituted a new high and was 61,272 tons or 1.1 per cent above that in the corresponding period of last year. Thus the continental total of 7,003,163 tons was 172,519 tons or 2.5 per cent greater than in the first ten months of 1956.

North American manufacturers' stocks on October 31, 1957 aggregated 202,602 tons compared with 196,892 tons on the last day of the preceding month and 130,838 tons at the end of October 1956. The continental total was composed of 18,466 tons and 184,136 tons held by United States and Canadian mills respectively and inventories were higher than a year ago by 9,816 tons in the former instance and by 61,948 tons in the latter.

KEEP PRESS FELTS OPEN WITHOUT SHUTTING DOWN

You don't need costly midweek shutdowns to unclog filled up felts, with Vickery Felt Conditioners on the job. Felts run open and clean all week long.

What's more, taking water out of the sheet at the presses is a lot cheaper than taking it out at the dryers.

Keep wet felts clean and open too, with Vickery *Wet Felt* Conditioners.

Want further information? Write

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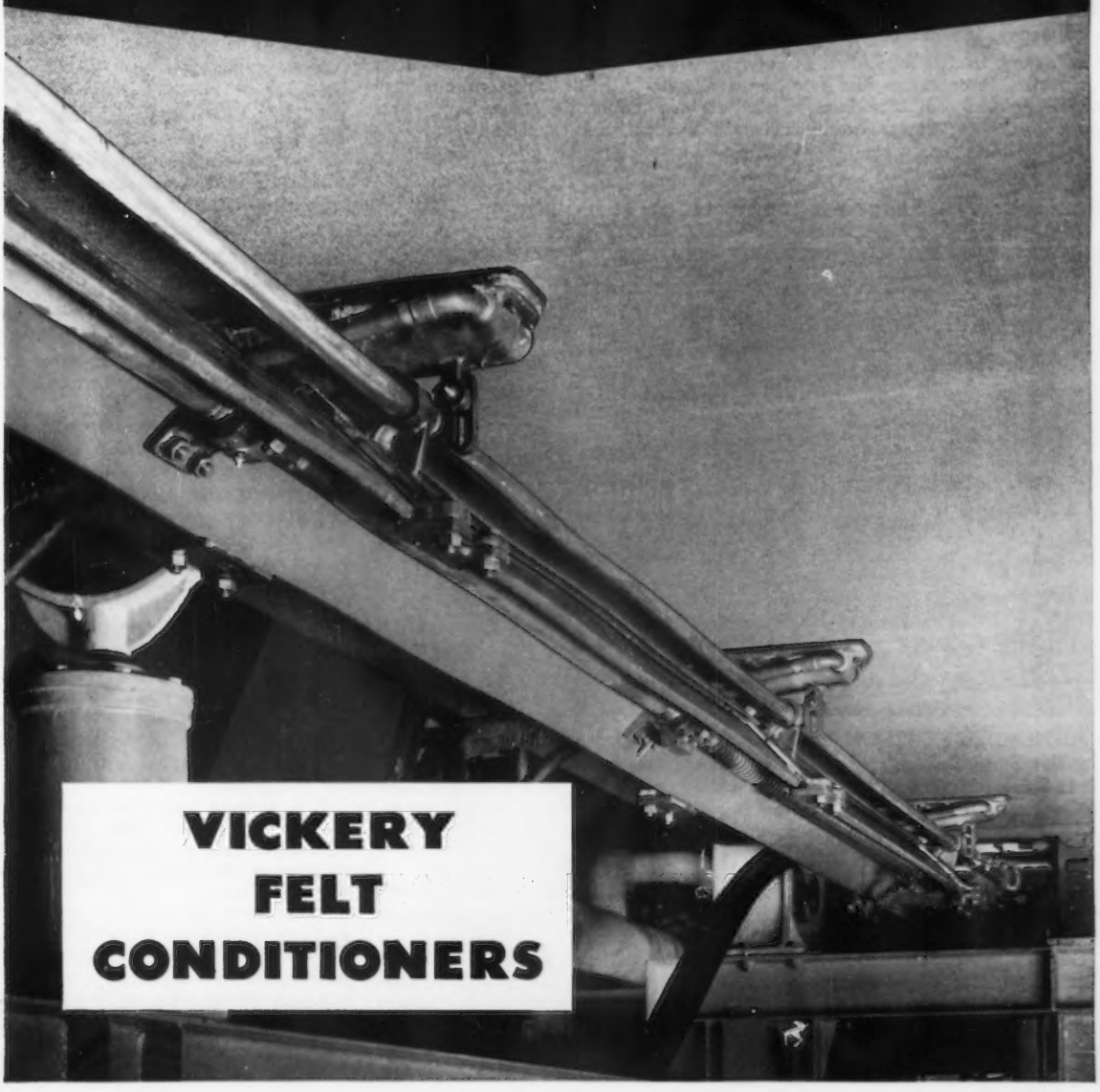

VICKERY FELT CONDITIONERS

PAPER PEOPLE

WINNERS OF THE WORTHEN BRAWN AWARD offered annually by the Maine-N.H. Section of TAPPI: F. Peter Ford, Rice Barton Corp., first prize for his paper "Temperature Rise as a Jordan Control"; Dr. J. L. Parsons, chairman of the judges; and J. N. Buck, Great Northern Paper Co., runner up, whose paper was titled "New Differential Drives for Existing Paper Machines."

Southeastern Superintendents Honor Students

SOUTHEASTERN DIVISION, Superintendents' Assn., presents awards to North Carolina State College students (at left) David White and Timothy Abernathy. M. L. Boinest, chairman, Southeastern Division, presents the checks while Hilliard D. Cook and R. G. Hitchings, assistant professors of pulp and paper technology, and C. E. Libby, director of curriculum in pulp and paper technology, look on.

Two students in pulp and paper technology at North Carolina State College, School of Forestry, Raleigh, N. C. —David Boyce White and Timothy Glenn Abernathy — were honored recently by the Southeastern Division of the Superintendents Assn. Each of the students was presented with a $200 scholarship by M. L. Boinest Jr., Halifax Paper Co., Roanoke Rapids, N. C., immediate past chairman of the Southeastern Division.

This scholarship, dating back to 1953, was originally known as the scholarship award of the Southeastern Division of the American Pulp and Paper Mill Superintendents Association, it is now known as the William H. Brydges Memorial Scholarship. The name was changed recently to honor Mr. Brydges, a past chairman of two divisions, including the Southeastern Division; and a past president, a trustee, and at the time of his passing on May 7, 1957, a trustee emeritus of the national association.

Mr. White, a graduate of Franklin High School in Western, N. C., has spent several summers working in the mill of Mead Corp. at Sylva, N. C. Last year he acted as a group leader for a group of summer students working on water pollution problems in the Sylva area.

Mr. Abernathy, Gastonia, N. C., has had one period of work experience in the paper industry, being employed last summer in the mill of International Paper Co., Georgetown, S. C.

New President of Beaver Wood Fibre

Peter Williamson has been elected president of the Beaver Wood Fibre Co. Mr. Williamson also has been named a director of the Beaver Co. Ltd., the parent company, and of the Bestwall Gypsum Co., Ardmore, Pa., of which it is a wholly-owned subsidiary.

Eastern Executives for Westminster Paper

Following the recent purchase of Crabtree Mills Ltd. in Quebec, E. M. Herb, president, Westminster Paper Co. Ltd. announced three executive appointments:

John Ashby, vice president and director of Westminster Paper Co. and member of the executive committee, becomes vice president for operation. Mr. Ashby will shortly move his office to Montreal where he will direct the integration of the new Crabtree Mills Div. into Westminster Paper Co. In addition to his new responsibilities, Mr. Ashby will maintain overall direction and co-ordination of the company's manufacturing activities at both the New Westminster and Crabtree Mills plant.

Horace F. Winchell, plant manager at New Westminster, will assume the chief operating responsibility for western production.

J. S. Gilham, for some years plant manager at Crabtree Mills, has joined Westminster Paper Co. Ltd. and will continue in charge of the plant at Crabtree Mills, Que.

Milprint Adds to Sales Staff

Joseph O. Moi has been appointed to the sales staff of Milprint, Inc. He will represent Milprint in northern Texas.

Grandbois Ends Washington Duty

Morlan J. Grandbois has completed six months assignment as director, Forest Products Division, B. D. S. A., Department of Commerce. He was marketing coordinator, St. Regis Paper Co.

Blandford Appointed Allied Comptroller

Harry T. Blandford has been appointed comptroller of the Allied Paper Corp. with headquarters in Chicago.

According to Arnold H. Maremont, chairman of the board, Mr. Blandford's primary responsibility will be to implement the corporation's cost control and profit improvement programs. He is also to synchronize the accounting and financial matters of Allied's subsidiaries and recent acquisitions.

Allied Paper Corp. is the parent company of the Phillips Control Corp., Joliet, Ill., which makes electronic relays; Max Eckardt and Sons Ornament Corp., New York and New Jersey, manufacturer of Christmas ornaments; the Allied Paper Mills, Kalamazoo, Mich., paper manufacturer; the Osborn-Midwest Paper Corp., Marion, Ind., manufacturer of stationery and paper school supplies; and the Allied Albany Paper Corp., Albany, N. Y., now being converted for newsprint manufacture.

Kodak Paper Service Head Retires

Milton F. Fillius, director of the paper service division at Kodak Park Works, has announced his retirement, effective January 1, after more than 41 years of service with Eastman Kodak Co. Howard E. Smith has been named to succeed Mr. Fillius.

Roberts Goes to Celotex Research

Celotex Corp. appointed James R. Roberts, former manager of research and development operations of Weyerhaeuser Timber Co., as research manager.

Dunn Named to Purchasing Job

Walter A. Dunn has been made assistant purchasing agent of the Research and Engineering Center of the Diamond Gardner Corp., 280 Fairfield Ave., Stamford, Conn. (Post Office Box No. 522). Mr. Dunn is replacing W.lliam Ackerman, Jr. who is leaving the company.

Weyerhaeuser's Ingram Retires

Charles H. Ingram, executive vice president of Weyerhaeuser Timber Co., will retire January 1, but will continue to serve on the company's executive committee and board of directors, F. K. Weyerhaeuser, president, has announced.

After the first of the year, the company's top management will consist of the president, four major staff executives and four major operational executives. The position of executive vice president will be discontinued.

Major staff executives reporting to the president will be W. P. Gullander, financial vice president; J. E. Nolan, vice president and general counsel; C. D. Weyerhaeuser, manager of forestry, lands and timber; and John L. Aram, vice president and assistant to the president.

Mr. Aram will have both staff and operational responsibilities. As staff executive, he will have charge of public and industry relations, research and development activities and overall traffic policy. As an operational executive, he will have responsibility for special products manufacture and sales, including production of hardboard, particle board, Ply-Veneer, and bark products.

NOW FOR

FASTER, BRIGHTER, DIRECT BLUES

SANDOZ PYRAZOL FAST SKY BLUE

7GUL

SANDOZ

This newly perfected Sandoz product delivers markedly improved results in blues.

It is one of the fastest of dyes for cover, bond, specialty and bag grades.

It offers extremely attractive brightness and greenness of shade.

Considered the greenest of the Direct blues for paper.

Shows only a very slight break at 20 Fade-O-Meter hours when dyed on bleached sulfite.

For immediate and complete information on this new Sandoz product, mail this coupon today.

Sandoz, Inc.
61-63 Van Dam Street
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SANDOZ, INC.

61-63 Van Dam St., New York 13, N.Y.
ALgonquin 5-1700

NEWS OF CONVERTERS

Graham Expands Manufacturing Facilities

The management of Graham Paper Co., St. Louis, has announced that the company's new manufacturing plant will be completed and ready for operation about January 1. The new modern building located at 7526 North Broadway in St. Louis will be used exclusively to house the company's greatly expanded manufacturing and converting operations. The main offices and warehouse will remain at their present location on Spruce Street.

Graham Paper Co.'s new manufacturing plant will be a one-floor steel, concrete and brick structure containing over 40,000 sq. ft. of floor space. It will be divided into approximately three equal parts; in the rear section will be stored raw material needed for the converting operations; in the center section the converting equipment will be located; and in the front part of the building, facing Broadway, the finished product will be stored.

Construction of a separate manufacturing plant was necessary to accommodate their expanded lines of converted paper products. Some of the more popular items that will be produced in the new plant are converted rolls for bank and office use, cash register rolls, adding machine rolls, and many miscellaneous converted roll items, as well as file folders and index cards, laundry paper supplies, and boxed typewriter paper.

New cutting machines including automatic spacers, scoring and shear cutting equipment as well as the most modern rewinders and slitters, will be brought to the new site to increase production and make available many new items for modern office uses. The finished products will be handled on pallets with electric straddle type warehouse trucks.

Joe Istwan, who has been with Graham for 30 years, has been appointed manager of the new converting plant. He has been in charge of Graham's manufacturing operations at the Spruce St. plant since 1951.

Va. Folding Box Sale to Westvaco Completed

Acquisition of Virginia Folding Box Co. Inc., Richmond, Va., a major supplier of packaging materials to the tobacco industry, by West Virginia Pulp and Paper Company was completed on November 22.

An exchange of 155,000 shares of West Virginia common stock for all the stock of the folding box company finalized the transaction, first announced by the two companies in mid-October.

The folding box company is to be operated initially as a subsidiary of the parent company, under the direction of the present management and supervisory personnel. Horace A. Gray, Jr., who has been chairman of the board, will continue as a director of the subsidiary, and Lewis G. Chewning will continue as president and a director. Later the box company will become a division of West Virginia.

Principal products of Virginia Folding Box are printed blanks for crushproof cigarette boxes and 10-pack cartons.

Intl. Plans Florida Plant

C. S. Edgar, general manager of the Single Service Division of International Paper Co., has announced that the company plans to build a plant for the manufacture of Pure-Pak milk containers near North Miami Beach, Fla.

Mr. Edgar said that the new plant is being built in order to provide better service to the rapidly expanding dairy industry in Florida.

The plant will be located between Route 9 and the Seaboard Railroad just north of the Sunshine State Parkway. Construction will begin shortly and plans call for the completion of the new unit in the summer of 1958.

The plant will be a one-story building employing approximately 50 people. It will have a rated capacity of approximately 35,000,000 paper milk containers monthly.

The new plant will be the twelfth to be operated by the Single Service Division. Other plants are located at Kalamazoo, Mich.; Philadelphia, Pa.; Bastrop, La.; Kansas City, Kan.; Atlanta, Ga.; Youngstown, Ohio; Belham, N. Y.; Waco, Texas; Minneapolis, Minn.; Turlock, Calif. and Raleigh, N. C.

Lowey Named to Post at Ritchie

Joseph C. Lowey has been appointed director of sales and marketing for W. C. Ritchie and Co., Chicago, package manufacturing subsidiary of Stone Container Corp. He is responsible for increased emphasis on national sales, product planning and development, and merchandising and design, as well as counseling customers in packaging and marketing. Staff and physical facilities for such services are being expanded.

W. C. Ritchie and Co. makes set-up boxes, folding cartons, fiber cans and tubes, and transparent packages.

Greeley Elected By Fulton Bag Co.

J. Frank Greeley, general manager of the multiwall paper bag sales for Fulton Bag and Carton Mills, New Orleans, has been elected a vice president. Mr. Greeley has been in New Orleans since 1948 when Fulton entered the multiwall paper bag field.

Karl E. Prindle

Prindle Receives First Packaging Award

Karl E. Prindle of Dobeckmun Co., Cleveland, Ohio received the first Professional Award of the Packaging Institute at the Institute's 19th Annual Forum, October 28, in New York City.

The bronze plaque is inscribed "... in recognition of his pioneer work in flexible films and his outstanding contributions to the field of packaging technology."

In making the presentation, Roger V. Wilson of Continental Can Co., Awards Chairman and a Director of the Packaging Institute, stated "It is fully intended that this award shall constitute the highest honor for technical achievement in packaging that can be conferred on individuals in this country."

Potlatch Starts Paper Cup Div.

Earl R. Bullock, public relation director for Potlatch Forests, Inc. has been named manager of the newly formed Paper Cup Division and will move to Oswego, N. Y., to head a cup manufacturing plant there.

Mr. Bullock started at PFI as a lumber grader and served as personnel director after a tour of military service during World War II. In 1949 he moved to his public relations post.

Mr. Bullock has served as president and a director of the Lewiston Roundup Board and has been a director of the Lewiston Chamber of Commerce.

The New York plant will produce paper drinking cups from six to 12-ounce sizes. Stock to be used for the cups will be supplied by the PFI pulp and paper mill at Lewiston, Idaho.

Hesse Elects Collins Vice President

H. E. Collins has been elected vice president of Hesse Envelope Co., it has been announced by Frank G. Love, president of the Dallas firm.

Paul Pauline

Fills New Post as General Manager

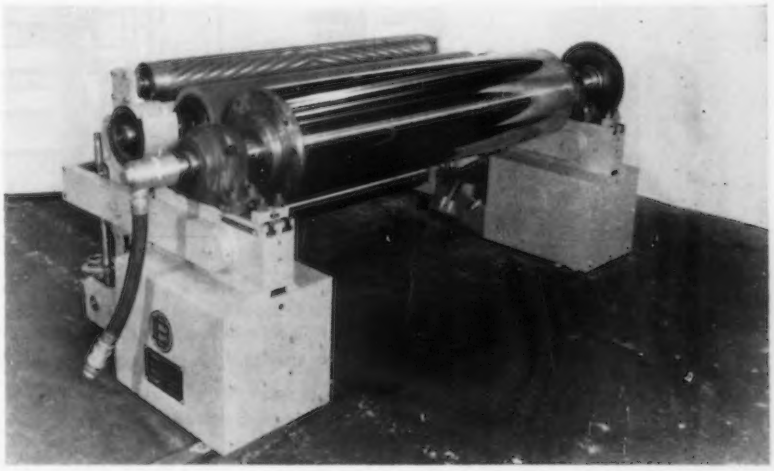
National Container Corp. has created a new managerial position at its plant at Madison, Ill.

The new post, general manager, has been filled with the appointment of Paul J. Pauline of Terre Haute, Ind., former assistant to general sales manager of Wabash Fibre Box Co. The Madison plant converts paperboard into corrugated cartons, and is one of 18 such plants operated by National Container, a subsidiary of Owens-Illinois Glass Co.

Paul T. Kirby

Named Assistant by Ludlow Papers

Ludlow Papers Inc., manufacturers of industrial packaging papers, gummed tapes and building papers, has appointed Paul T. Kirby assistant to Packaging Papers Division Manager E. D. Cookson. Mr. Kirby also will be in charge of sales service at Ludlow's Needham Heights office. Before joining Ludlow he was, for five years, branch manager for the Schwarz Paper Co. in South Bend, Ind., a franchised distributor of Ludlow products.



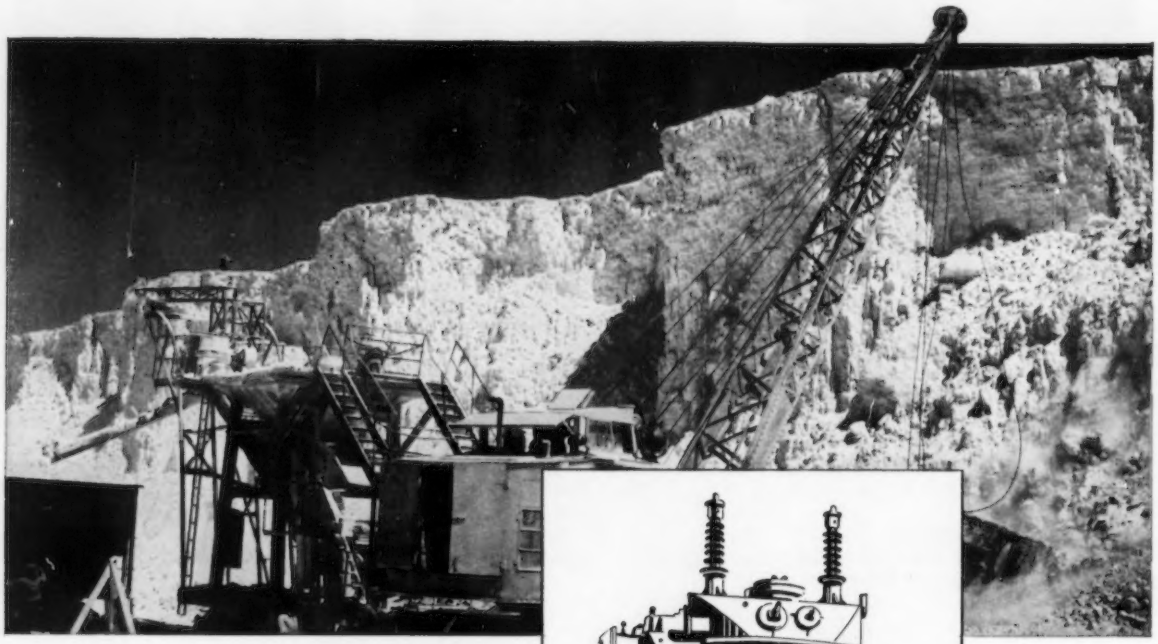
New Polyethylene Extrusion Laminator

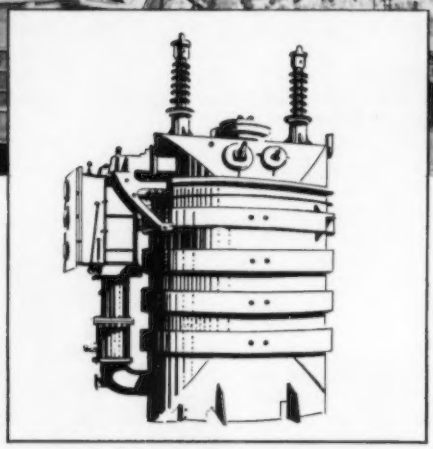
A new model laminator for extrusion coating of polyethylene film to various web materials, such as cellophane, Mylar, aluminum foil, paper and board, has been developed by Black-Clawson Co., Dilts Division. The model is known as the PL-600 and is offered in widths up to 100 in. and at speeds to 1,000 f.p.m.

Improvements in this design over previous models are principally in the accessibility of the controls, general openness and cleanliness of design, and ease with which any roll might be removed from the machine without disassembling any of the machine components.

The unit consists of heavy cast iron base frames which house and enclose air cylinders which load a 10-in. diameter silicone rubber covered pressure roll against a chill roll. For detailed information write to the Dilts Division, Fulton, N. Y.

SULPHUR *helps to create Headline Products*





SF_6

A new concept in transformer insulation

GAS INSTEAD OF OIL... *that is headline news!*

Sulphur Hexafluoride is a heavy, non-flammable gas and is both chemically and physiologically inert. These characteristics plus its high dielectric strength pin-pointed the heavy duty transformer field as a logical target. And so it turned out!

SF6 instead of oil is now being used in high voltage transformers with the following advantages:

- **operations are much quieter**
- **lighter construction permissible**
- **less restriction in location**
- **lower maintenance**
- **fire-proof and explosion-proof**

In SF6, the electrical and electronics industries are finding a very useful product providing both electrical insulation and cooling. As in so many 'headline' products serving industry, the element S is part of the chemical structure!

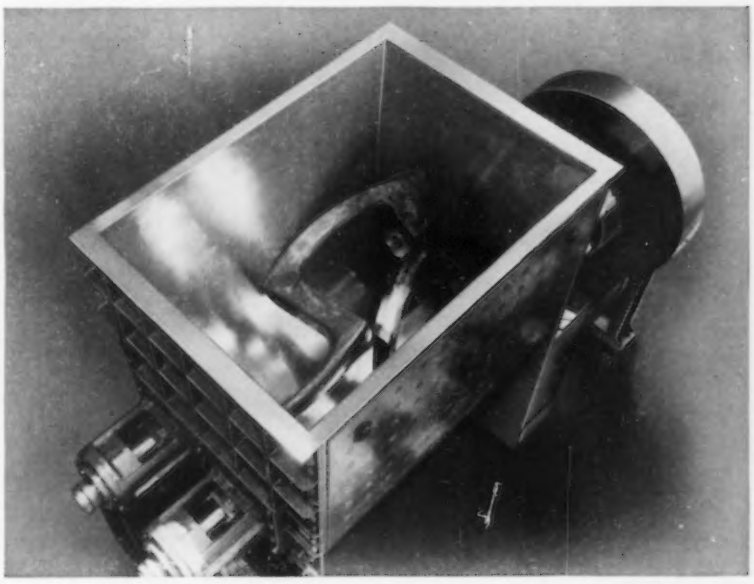
Texas Gulf Sulphur Co.

75 East 45th Street, New York 17, N.Y.
811 Rusk Avenue, Houston 2, Texas

Sulphur Producing Units
- **Newgulf, Texas**
- **Moss Bluff, Texas**
- **Spindletop, Texas**
- **Worland, Wyoming**

PRICES OF MATERIALS

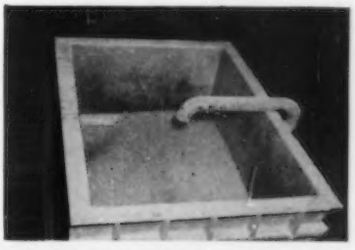
Aluminum sulphate:			
coml. bulk, c.l. wks.	cwt.	2.00	/ —
iron-free, c.l. wks.	cwt.	3.55	/ —
Casein, acid prec.:			
dom. sh. pt. c.l. (30 mesh)	cwt.	56.00	/ —
Arg. ex. dock	cwt.	21.50	/22.50
New Zealand	cwt.	24.50	/25.00
Caustic soda:			
c.l. wks. solid, 76%	cwt.	4.30	/ —
flak. & grd. drums, c.l.	cwt.	4.70	/ —
liquid 50% tanks		2.90	/ 3.00
liquid 73% tanks		3.00	/ —
China Clay			
dom., dry-grd., airfloat:			
325 mesh bgs., c.l. Geo.	ton	10.00	/ —
300 mesh, bgs., c.l. Geo.	ton	13.50	/14.50
imp., white, lump, c.l. ex. dock		20.00	/35.00
Chlorine:			
single-unit tanks, works	cwt.	3.15	/ —
multiple unit, 2-5 cars per yr.		5.25	/ 4.05
Lime:			
hydrated, bulk, c.l. N.Y.	ton	23.63	/ —
quicklime, bulk, c.l. N.Y.	ton	22.13	/ —
Gum rosin:			
K, M, N, drums, c.l. Savan.	cwt.	7.40	/ 7.92
Rosin size:			
70%, gum & pale paste, tank cars, south, sh. pt.	cwt.	7.38	/ 7.48
Saltcake:			
dom. bulk, 100% anh. wks.	ton	28.00	/ —
Soda ash:			
light, 58% ash bags, wks.	cwt.	1.85	/ —
bulk, c.l. wks.	cwt.	1.60	/ —
Sodium chlorate:			
drums, c.l., wks.	cwt.	9.00	/ —
drums, l.c.l., wks.	cwt.	9.50	/10.50
Sodium peroxide:			
dms., c.l. E. of Miss.	lb.	.20½	/ —
l.c.l. (same basis)		.21	/ .21½
Sodium silicate, 40° Be.:			
tank-cars, wks.	cwt.	1.20	/ —
drums, c.l. wks.	cwt.	1.55	/ —
47° Be. WW.			
tank-cars, c.l. wks.	cwt.	1.90	/ —
drums, c.l. wks.	cwt.	2.25	/ —
Soybean, protein:			
chem. isol., wks, c.l. bgs.	lb.	.23	/ —
Starches:			
Corn, multiwalls, c.l. prod. plant:			
pearl	cwt.	6.49	/ 6.75
white, dextrins	cwt.	8.08	/ 8.20
chlorinated	cwt.	8.25	/ 8.35
potato, Idaho, c.l. wks.	cwt.	6.50	/ —
East, fr. all. 50 cents cwt.			
potato, Maine, f.o.b. wks.	cwt.	6.25	/ —
Sulphuric acid:			
60° Be. cbys. c.l. wks.	cwt.	2.00	/ —
l.c.l. wks.	cwt.	2.45	/ —
tank-cars, wks.	ton	18.60	/ —
Sulphur:			
crude, c.l. mines, contract, long	ton	23.50	/ —
f.o.b. vessels Gulf dock	ton	25.00	/ —
Sulphur dicxide:			
liquid, coml. cyl., wks.	lb.	.10	/ .12
multi-unit cars, wks.	lb.	.0535	/ —
Talc, fibrous grd., bags:			
c.l. wks., N.Y.	ton	28.00	/ —
l.c.l. wks., N.Y.	ton	31.00	/36.00
Titanium dioxide:			
anstase, c.l. dlvd. E. bags	lb.	.25½	/ —
l.c.l. dlvd.	lb.	.26½	/ —
rutile, c.l. dlvd.	lb.	.27½	/ —
l.c.l. dlvd.	lb.	.28½	/ —



this DAY mixer
changes hard clay to
face cream consistency
in 60 minutes

That's one reason a DAY Cincinnatus Clay Mixer was just installed in the new East Texas Pulp and Paper Co. plant, Evadale, Texas, producers of the high quality Texicote folding carton stock and other food board grades.

The smooth, gritless clay coating developed by this mixer, results from the tremendous, power packed mixing action of heavy steel dispersion contoured agitators, working the batch against itself, as well as against the bottom and sides of tank. This speedily forces binders and wetting agents into the pigments, delivering a mix with a "face cream consistency" - - - and binder savings up to 20%.



DAY 350 gal. mixer operating at East Texas Pulp and Paper Co. Note soft clay dispersion of high solids batch.

Like all DAY equipment, these mixers are engineered and built for extra long service under the toughest conditions. Available in 5, 20, 200, 350, 550, 660 and 1000 gallon pasting capacities.

Customer Lab service available for product testing.

The **J. H. DAY** *Co.*

Division of The Cleveland Automatic Machine Co.
SERVING THE PROCESS INDUSTRY SINCE 1887
4920 BEECH ST., CINCINNATI 12, OHIO

New Coating Cuts Damage to Corrugated Containers and Contents

David Bookkshester

Midwest Sales Manager, Paisley Products, Inc.
Division of Morningstar, Nicol, Inc.
Chicago, Ill.

For many years damaged shipping containers and contents have caused considerable economic loss in handling and shipping operations. Much of the damage was, and is, caused by load shifts where large stacks of boxes lean and fall to the ground or slide into disorganized piles. A new approach to this problem is the development of our anti-skid coating which prevents shifting of loads and spilling while in transit. Called Paisley Non-Slip Coating No. 1715, it is a compounded resin emulsion which is applied to the shipping containers and dries in a matter of seconds to a thin, transparent film. This new coating has been remarkably effective in many applications to date, and widespread use in warehousing and shipping operations is indicated.

Previous Methods

In the past, various procedures have been used in an attempt to overcome this handling problem, and 15 years ago great emphasis was placed on strapping loads of corrugated material on wooden pallets. This method was successful in that unloading time as well as damage was reduced. However, it was a tedious and time consuming process.

The next step was the use of a strip-gluing method which involved the brush application of adhesive to corrugated boxes as they were loaded into railroad cars or trucks. This method proved inadequate because of the tearing of the boxes as they were separated. The development of a palletizing unit which applied two coatings of adhesive to the bottom of shipping cases also proved undesirable for the same reason.

A further refinement of the gluing method was the use of an adhesive having low tensile strength to allow a stack of cases to be pulled apart with minimum fiber failure while high shear strength of the glue prevented slippage or shifting of the cases. Although satisfactory to some extent, this method also proved inadequate due to discoloration of the cases and variation in the box material which caused excessive tearing in some cases.

Another method used as an anti-skid measure has been roughening the surface of the box. Consequent weakening of the box structure and poor appearance have precluded further use of this measure. More recently, some work has been done with non-slip inks, but results to date do not indicate this to be a satisfactory arrangement.

Thin Coatings Effective

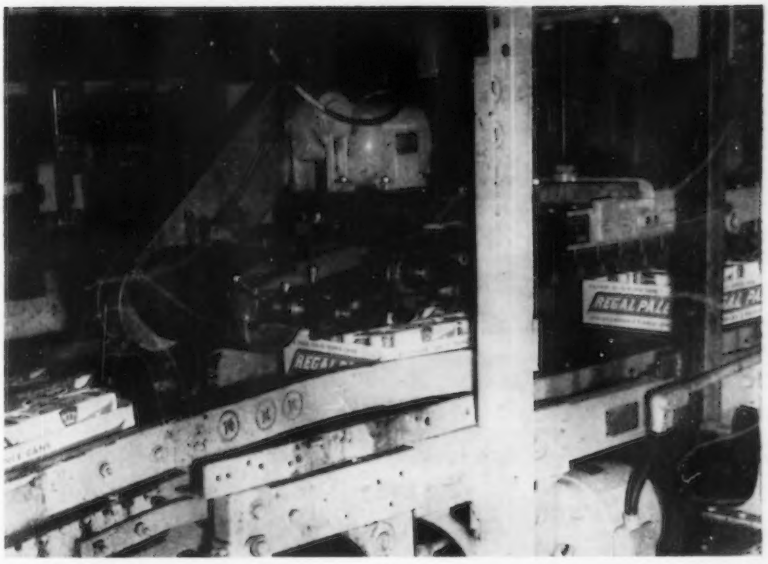
Our new non-slip coating has provided an effective solution to these handling and shipping problems at a minmum cost. It is supplied as a light cream colored emulsion which is easily handled without special equipment. There are no difficult storage, pumping

NO COATING—Five miles an hour sudden stop tumbles boxes onto the floor.

WITH COATING—Five miles an hour sudden stop failed to dislodge boxes.

or wash-up problems. The coating may be applied by any conventional means such as spray, brush or roller coating. However, due to the fact that only a very thin coating need be applied, spraying appears to be most suitable. Brush or roller coating methods give a thicker coating which is no more effective and requires a somewhat longer drying period. Using the spray method the coating dries almost instantly to a non-blocking, non-slipping, transparent film. It cannot be detected on the container by odor, color, or casual touch.

It should be noted here that we have conducted tests to determine the effect of the spray on plant personnel. The tests revealed that the coating contains no toxic ingredients, and dust created in the spray coating operation would be classified as a non-specific or nuisance dust only. Test results also indicated that dust concentration was much below the acceptable standard allowable concentration.



POT-AND-ROLL method of applying non-slip coating to tops of six-can beer packs.

Containers Stop Sliding at Socony

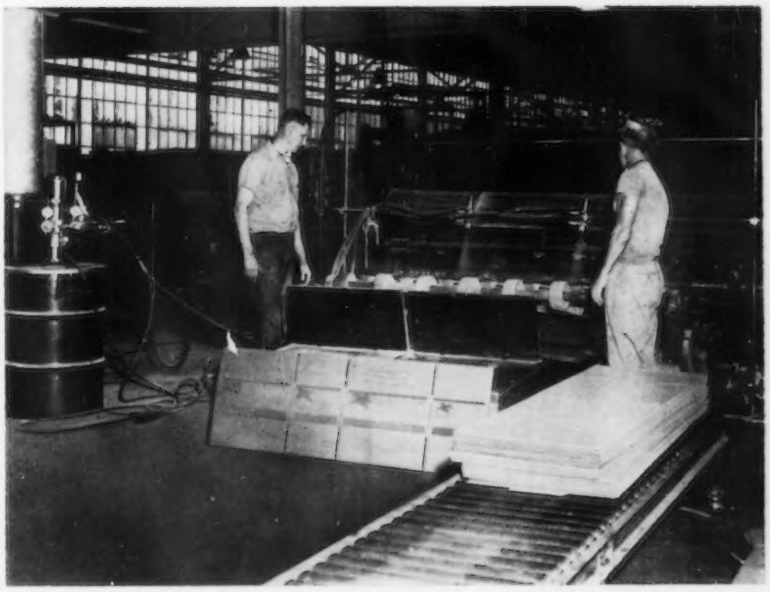
Our new non-slip coating has been used with considerable success by Socony Mobil Oil Co. to eliminate spilling and damage of corrugated box shipping containers at their Paulsboro refinery. Previous to use of the coating the speed of lift trucks had to be reduced to 1/3 or 1/4 of normal when handling corrugated boxes such as 40-unit pallets of paraffin wax. As many as 30 filled boxes a day were being spilled and damaged as the loads were carried over a ¾ mile unpaved road between the wax works and warehouse. During inter-city shipments by truck, loads were shaken into weird leaning-tower stacks or jumbled piles on the floor.

As counter-measures Socony tried inter-locked loading, tilting outside pallets inward, taping the inside of the loads with pressure sensitive tape, gluing, and steel strapping. The problem was finally solved by the application of Paisley's non-slip coating to the box surface. Shipping containers for wax and motor oil now supplied to Socony are coated at the point of manufacture so that, when filled and sealed, no slippage occurs during handling and transportation.

The non-slip coating has allowed resumption of normal truck speeds and has eliminated spillage on the wax works to warehouse run. Long inter-city truck shipments are now made with boxes in unsupported stacks of seven tiers high without perceptible displacement. These results have proven the case for Socony.

Further applications for the new coating are indicated by the following typical uses:

a—One firm is experimenting with the use of non-slip coating in a windshield pack to prevent slippage of glass during transit. This would eliminate many hours of extra work in placing tapes and other protective materials.



SPRAY METHOD applies coating to container blanks at printer-slotter discharge.

b—One firm that had difficulty in shipping truckloads of beer between their brewery and warehouse, applied the non-slip coating in place of a palletizing glue in chipboard separators. It was the first shipment ever made by their plant and warehouse without any damage occurring. In this instance, the spray was applied by the brewery before ordering their cases coated.

c—For the coating of 6-pack units, some breweries are applying the coating by means of a large roller, and drying time is allowed before the stacking of the 6-pack unit. Other breweries are spray-applying the coating to the 6-packs, and this seems to be the best method, since the coating dries almost immediately to prevent blocking.

Huber offers you a complete line of modern paper clays

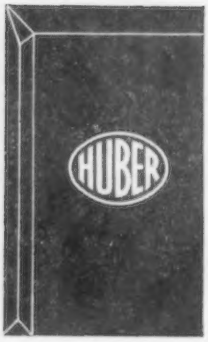
HYDRAFINE

A clay of extraordinary fineness, now spray-dried in the pre-dispersed form preferred by many manufacturers. Also available in lump and pulverized form.

HYDRASPERSE

A spray-dried, low-viscosity, high-brightness, fine-particle, Georgia coating grade, in bead form, with the dispersant already added. Saves "make down" time and assures thorough dispersion in practically any equipment.

Quality Clays for the Paper Industry



SPECIAL HYDRATEX

A Georgia coating grade of fine particle size, with excellent covering power and flow characteristics ideally suited to certain coating methods. Lump or pulverized.

X-43

A fine-particle Georgia coating clay of low viscosity and high brightness particularly well adapted to high solids coating. It is available in either lump or pulverized form.

HYDRATEX

A Georgia coating grade of medium particle size distribution and price. Quality controlled throughout. Lump or pulverized.

SWW

A Georgia water-washed filler of high, dependable brightness. Available in lump form where this type is preferred over the fluffier airfloated fillers. Also available pulverized.

CWF

A Georgia water-washed filler of same general type as SWW but with a slightly coarser particle size distribution which in some mills permits higher solids slurrying. It is available as lump or pulverized.

HI-WHITE

Low-cost airfloated filler clay, mined in Georgia, of high brightness, fine particle size, minimum abrasion. Tested regularly each half-hour during production.

PARAGON

Produced in South Carolina, this low-cost airfloated filler has a slightly larger particle size than Hi-White, its Georgia counterpart. Refined to the same close specifications with respect to abrasion and uniformity.

HUBER

Huber's complete line of paper clays—one of the most versatile in the industry—enables you to select clays to meet all your everyday paper making needs, plus many special requirements.

All Huber clays are held uniform from car to car. Thirteen separate laboratory tests, developed during our 25 years in the clay business, control and maintain Huber's uniform high quality.

Many important innovations have resulted from Huber's understanding of the paper industry's needs. Among these is our patented Viscontrol® process which assures you of maximum uniformity in the flow characteristics of our coating clays.

Palletizing, the de-airing and reshaping of shipping bags—another Huber first—save you 25 percent in shipping and storage space—and provide easier handling of the bags.

Our clay-research laboratory facilities, among the finest in the industry, enable us to develop "made to measure" clays for your unusual applications.

Use clays from Huber's complete line with full confidence. And remember—our laboratory staff personnel are happy to help you realize *new* ideas for better paper making. Take advantage of our quarter century of experience. Write us about your clay problems today.

J. M. HUBER CORPORATION • 100 PARK AVENUE, NEW YORK 17, N.Y.

Headquarters for Clay Technology • Developers of Viscontrol®
Authors of "Kaolin Clays and Their Industrial Uses"
Producers of a Complete Range of Clays for Modern Papermaking
MINES AND PLANTS: HUBER, GA., LANGLEY AND GRANITEVILLE, S. C.

A world of high profit opportunities await you with Hudson-Sharp's low cost

UTILITY GRAVURE PRESS

Heavy-duty 2R-A press gives you accurate color registration and top quality printing at *down-to-earth investment costs*

Here's Why—

Simplified operating mechanisms eliminate needless costly controls

Designed for heavy-duty quality production printing of packaging films, cellophane, foils and papers — lightweight board stocks and similar materials, the 2R-A brings you many advanced features in roto-gravure at a low investment cost you are sure to profit by.

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Use of Chips from Sawmill Waste at Crossett

Jack E. Meadows
Assistant Manager, Crossett Paper Mills,
The Crossett Co., Crossett, Ark.

Sawmill chip consumption has grown at this southern kraft mill until it represents 30% of the mill's pine usage, equivalent to 100,000 cords a year. Here are the details of how the chips are handled.

A report released recently by the Forest Service, U. S. Department of Agriculture shows that over 20,000,000 cords of pulpwood were produced in the South in 1956. Of this total, 659,000 cords, or more than three per cent of the total production, came from residue of wood-using industries. The tremendous increase in the utilization of sawmill waste in the last few years has been recognized as one of the most important forest conservation steps in the South.

In April of 1952, Crossett Paper Mills, a division of The Crossett Company, Crossett, Ark., began receiving sawmill chips from the Southern Lumber Co., Warren, Ark. As far as we know, this was one of the first cases of mill-scale usage of sawmill chips in the South. In 1952 we used a little over an equivalent of 5,000 cords of the chips. Since that time our chip program has increased each year, until in 1956 our chip usage equalled 67,000 cords, or 19.5 per cent of our total pine pulpwood consumption. In 1957 our use of sawmill chips has continued to increase and will amount to nearly 100,000 cords on an annual basis. The sawmill chips will then represent 30 per cent of our present pine pulpwood requirements.

Seventeen sawmills plus one slab concentration yard are now supplying us with chips. These sawmills vary greatly in size. The smallest mill cuts about 10,000 board feet of lumber per day in pine while the largest will cut up to 240,000 board feet. We are reaching out as far as 280 miles by rail for sawmill chips. Truck and trailer shipments come into Crossett from sawmills as far as 80 miles distant.

Sawmill Equipment

Just as there is a great variety in the size of sawmills furnishing us chips, there is also a great deal of variety in the type of equipment used by these suppliers. The larger mills are using ring type barkers of the Nicholson and Anderson type. Most of the medium size mills are using chain flail type log barkers while the smaller mills are using chain flail slab barkers for the most part. Our suppliers cut the chips on several different makes of waste-wood chippers, some of which are drop feed chippers, while others are horizontal feed chippers. We screen the chips at the mill, so we can buy either screened or unscreened chips. The chips are loaded into trailers or open top railroad cars by either a belt or chain conveyor or by being blown to a cyclone and dropped into the car.

Methods of Shipment

Truck shipments of chips amount to about 13.5 per cent of our purchases and are unloaded during the daytime on a normal five week basis. The balance of the chips are received in various types of railroad equipment and are unloaded around the clock. The trucks are mainly of the two-ton size and the trailers are mostly tandem axle vans which hold about seven cords of chips. These big van trailers are 32 feet long, eight feet wide and seven feet high. Rail shipments are received in three types of special chip cars. Chips from our own Sawmill Division are transported in flat cars with sides built up out of wood to a height of 11 feet. These cars have four compartments and are unloaded by a drag in each section. We average about 90,000 pounds of chips in these cars which have a 4000 cubic feet capacity. A second type of car is a side dumping gondola car which has had its sides extended with wood to a height of 10 feet. The cubic feet capacity on this car is 4,579 and we average about 102,000 pounds of chips. The third special type of car is a bottom dump hopper with sides built up out of steel to about 10 feet and having a cubic feet capacity of 3,572. We average a little over 75,000 pounds of chips in these cars. The latter two types of cars are unloaded with a car shaker. All of these cars remain in chip hauling operations at all times. Regular gondola and hopper cars such as used for sand and gravel are used by the railroads to supplement our suppliers' needs when required.

TYPICAL CHIP ANALYSES

Screen Size	Sawmill Chips	Pulp Mill Chips
On 1" Screen	4.3	4.4
Thru 1" on 3/4"	15.4	24.1
Thru 3/4" on 1/2"	37.5	39.6
Thru 1/2" on 1/8"	41.4	31.3
Dust	1.4	0.6
% Moisture	49.8	51.2
% Bark	1.4	0.5

Unloading Rail Cars

The chip unloading system at the paper mill centers around a six-foot deep, steel-lined pit located beneath the railroad track and having a capacity of approximately 1800 cubic feet. The rail cars are positioned over this pit by means of a cable attached to a motor-

driven winch. The cars with inverted eight-foot angle iron drags in the bottom are unloaded by attaching the chains on the drags to permanent hooks and pulling the drags from side to side by means of a reversible cable drum. The side-dumping gondola cars and the bottom dump hopper cars are unloaded by attaching a heavy duty car shaker made by National Conveyor and Supply Co. with a heavy-duty 7½ h.p. motor to the side of the car with bolts or a special wedge-type fitting. A hook-type fitting is used for attaching the shaker to regular gondola or hopper cars. We have had some trouble with the motors on the car shakers because of the heavy vibrational loads imposed on them.

Unloading Trucks

Trailer vans are unloaded into a small steel surge hopper containing about 300 cubic feet of capacity which is located at ground level about 20 feet away from the rail pit. A 48-inch wide rubber belt designed to carry 20 cords per hour conveys the trailer chips from the surge hopper to the pit. The trailer vans are dumped into the hopper by means of an Air-O-Flex dumping platform. The truck and trailer back onto a raised platform 10 feet wide by 50 feet long. The dumper can tilt a load of 80,000 pounds to an angle of slightly over 50 degrees. The unit has two 5-section heavy-duty telescopic cylinders and is operated by a hydraulic system driven by one 25 h.p. motor. We have had very favorable maintenance experience with the trailer dumping equipment.

Removing Chips from Pit

Chips are removed from the pit by four 16-inch wide refuse chains on the bottom. The chains are driven by a 15 h.p. motor at about 30 feet per minute and dump the chips onto a 24-inch wide rubber belt which conveys them to the screen. This chip screen is a Link Belt type CA-2514 vibratory screen driven by a 7½ h.p. motor. Accepted chips from this screen drop onto the belt conveying screened chips from the wood room chipper to storage. Rejects from the sawmill chip screen go to a hammer hog along with oversize chips from the wood room chipper.

The rail car dumping pit and the truck dumping platform together with the necessary controls for the conveyors and associated equipment are concentrated in one working area so that the entire chip unloading operation can be handled by one man per shift. This job is in our woodyard-wood room line of progression. It takes about 15 minutes to unload a trailer van. We unload about 12 trailers per day at present from five sawmills and a slab concentration yard. It takes about 45 minutes per car to unload our special rail cars with the drags. The other type of cars which are unloaded with a car shaker require about one hour each. Between the trailers and the rail cars we are unloading approximately 330 cords of chips per day at the present time.

Chip Quality & Specifications

In our chip procurement program we specify that the chips shall be made only from pine waste and shall have their natural green moisture content and be free from extraneous matter. When extra rail cars are used to supplement the special chip cars, care must be used at the saw mills to be sure they are clean prior to loading. We have had some cases where it was necessary to reject carloads of chips because of material left in the car from previous service. Most of the rail cars used for chips have open tops. To date, we have not found sufficient contamination on the top of the chips to cause us any trouble.

As mentioned earlier, we screen all chips at the mill and so do not require the saw mills to screen them. We do have specifications on sizes to encourage proper chipping operation. The chips have to be cut sharply across the ends. We allow five per cent oversize chips as determined by chips remaining on the one-inch-square mesh screen of a Williams laboratory chip classifying screen. We allow 1.5 per cent in fines as determined by the chips or dust passing through the ⅛-inch square mesh screen. A limit of one per cent on bark has also been set. If the averages on oversize, fines and bark for the month of a supplier exceed our tolerances, we deduct this excessive weight from the total chip weight before making payment.

Each carload or trailerload of chips that comes to the mill is sampled. An average analysis of the sawmill chips from all of our suppliers is shown in column one of the table, while the typical analysis of chips from the chipper at our pulp mill is given in column two. The sawmill chips are distributed fairly uniformly with our pulp mill chips as they go into our storage. The increased usage of sawmill chips over the past five years to the present figure of some 32 per cent has not affected our pulping results in any way that is discernible to us. It is our feeling that the sawmill chips, conforming to our specifications and as represented by the average analysis shown in the Table, provide a suitable raw material for our pine pulping needs.

Paper presented at the Joint Meeting of the Southern & Southeastern Divisions of the Superintendents Association held October 16-18, 1957 at Jacksonville, Fla.

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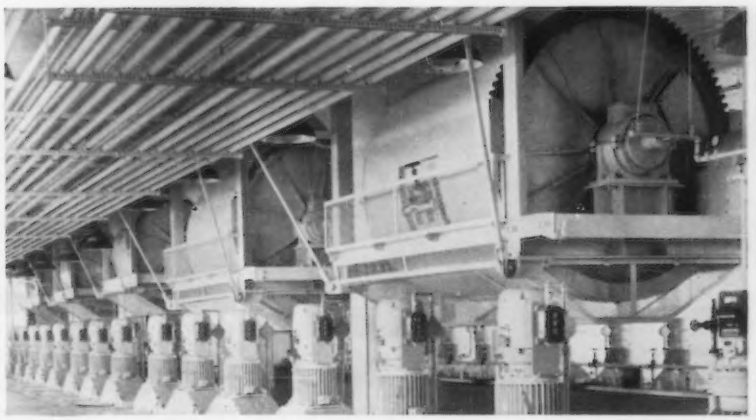

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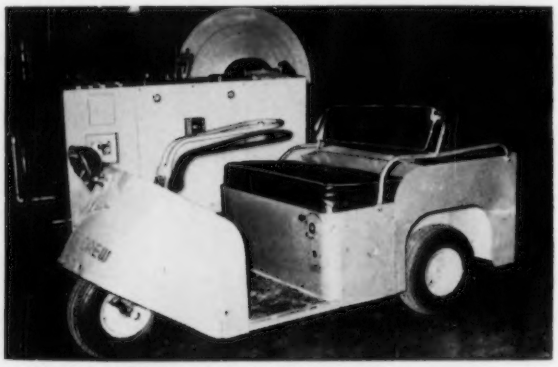
Wide Range of Industrial Trucks at Powell River

Twelve different types of industrial trucks are used at Powell River Co.'s huge sprawling plant at Powell River, B. C. This, the world's largest newsprint mill, has three separate groundwood mills, three paper mills, two woodrooms, a sulphite mill and numerous auxiliary buildings, and produces over 1400 tons of newsprint per day as well as market sulphite pulp and laminated building and other papers. There is therefore a need for a wide range of trucks not only for the transportation of materials but also personnel. Notable are the use of scooters to transport personnel who need to visit many departments and motorized carts to carry the crew of number nine paper machine the length of the machine room floor, 350 feet. Not shown in the pictures are the jeeps used by the security staff to cover outlying fringes of the plant.

TWO - WHEELED ALL - STATE MOTOR SCOOTER used by mechanical superintendent on his mill rounds.

BUDA CO. SHOP MULES used by riggers and millwrights to transport materials and personnel.



BATTERY-DRIVEN CUSHMAN CART transports up to four papermakers on the floor of No. 9 machine.

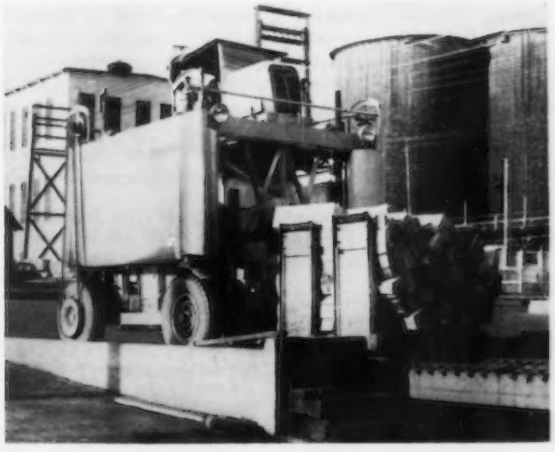
CLARK CLAMP TRUCKS used for carrying newsprint rolls from finishing rooms to waiting paper trains.

WILSHIRE POWER SWEEPER keeps storage floors clean.

YALE FORK LIFT TRUCK used for delivering equipment by mill stores personnel.

CUSHMAN TRUCKSTERS (gas engine) used by electricians, steam plant personnel and the groundwood inspector.

HYSTER CLAMP TRUCKS loading Powell River newsprint roll in ship's hold.



GEHRLINGER CARRIERS transport wood blocks to the groundwood mills from wood room.

THREE-WHEELED KALAMAZOO CHOREBOYS used for delivering equipment by mill stores personnel.

TOWMOTOR FORK LIFT TRUCK handles pairs of newsprint rolls on a skid.

The Problem of Groundwood Quality

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Manager, München Dachauer Papier Fabriken
Munich, Germany

English text by
G. P. Chinn

Before discussing the variables involved with wood grinding and how to use them for controlling groundwood quality, it is necessary to consider the problem of groundwood quality and its evaluation. Within the scope of this book, only the testing methods which can be used for routine groundwood control will be discussed. Laboratory testing is important with regard to long term statistical control of the groundwood production. However, while the standard testing procedures (1) can be used to give a much better evaluation of groundwood quality than the methods applied during practical operation, they take too long and the results would come too late to be of use for effective groundwood quality control.

Regardless of the method of testing, the main difficulty with quality evaluation in groundwood mills is that there is no commonly accepted knowledge regarding the quality most suited for the different kinds of paper. "Good quality groundwood" cannot be defined but must be considered with regard to the kind of paper to be produced, the characteristics of the paper machines, and the amount of chemical pulp added for paper production. In this regard, Brecht (2) has divided groundwood into nine different classes, the limits of which are set by the results of various tests (Table I). Brecht and Süttinger (3) and Brecht and Klemm (4) (5) established a special technology for groundwood which is the basis of today's concepts on its structure. In the following, a short summary of these concepts is given.

TABLE I—CLASSIFICATION SYSTEM FOR GROUNDWOOD
(According to Brecht and Süttinger)

Class	Groundwood Characteristic	Splinter Content %	Long Fiber Fraction %	Fines %	Freeness Can. Std.	Tensile m.	Number of Folds
I	Very Fine	0	s 1.5	g 60*	s 65	g 1500	—
	Fine Groundwood						
II	Fine, High Quality	0	s 6	g 55	g 50	g 3000	g 50
III	Fine, Average Quality	s 0.03	s 10	g 50	s 145	g 2000	g 5
	Groundwood with Long Fibers						
IV	With High Strength	s 0.1	g 15	s 50	s 175	g 2700	g 300
V	With Good Strength	s 0.2	g 20	s 50	g 115	g 2200	g 200
VI	Normal Groundwood	s 0.2	g 10	40-60	g 65	g 1800	g 20
VII	Below Average Quality	s 0.3	g 10	40-60	g 65	g 1500	g 5
VIII	Coarse Groundwood	s 4	g 20	20-40	s 500	g 1300	g 10
IX	Very Coarse	g 8	g 50	s 20	g 600	g 400	g 3

* "g" refers to the minimum percentage or test figure being greater than the number given. "s" refers to the maximum percentage or test figure being less than the number given. (All tests made according to German Standard Testing Procedures).

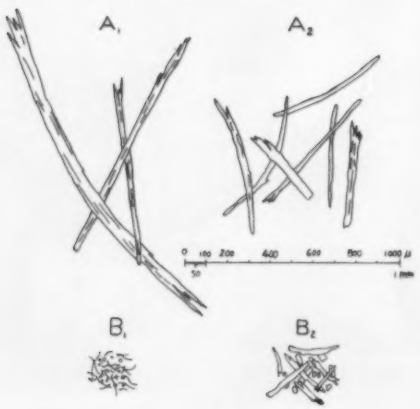

FIGURE 1—STRUCTURAL ELEMENTS OF GROUNDWOOD

A_1—Long fibers; A_2—Short fibers; B_1—Fibrilplasma; B_2—Flour.

Structural Elements

The structural elements of groundwood are defined as splinters, fibers and fines. The fibers are further differentiated as long and short (Figure I). However, this differentiation, based chiefly on differences of the length as effected by classifiers, is still not sufficient. The fiber thickness, flexibility and degree of fibrillation must also be considered. The fines are divided with regard to their shape and influence on strength properties into fibrilplasma (fibrils and sub-microscopic particles) and flour (granular or flat, small pieces of fibers). The evaluation of these additional characteristics is difficult and only recently, testing methods suitable for this purpose have been described by Klemm (6).

Relating the groundwood structure to the properties of the paper sheet is still more complex. Brecht and Klemm (4) established the scheme shown in Figure 2 which can be used to make the survey easier. Especially favorable groundwood components are long, thin and flexible fibers and a high percentage of these guarantee high dynamic strength properties (number of folds and tear). In general, the structure of the fibers influences chiefly the dynamic strength properties. The fines are not less important. When consisting mainly of fibrilplasma, relatively high static strength properties (tensile and burst)

result. If the fines consist of flour, all strength properties decrease. A distinct optimum initial wet strength can be observed at a certain ratio of fibers to fines. This ratio changes, however, depending upon the characteristics of both fibers and fines. At the optimum, the percentage of fines must just exactly fill the spaces between the fibers without disturbing the fiber to fiber contact.

The optimum properties of groundwood are different for each kind of paper and even for each mill. Roughly, it can be stated that for paper which has to be produced at high speed and with a low sulphite content and yet maintain good strength properties (e.g. newsprint), a free groundwood with long, thin and flexible fibers and the optimum percentage of fines (chiefly fibrilplasma) is required. However, where sulphite consumption is not very important, it is easier to make a slow groundwood with a high percentage of fines and to compensate for the missing fiber length by adding more sulphite. Paper where the smoothness is of primary importance (e.g. rotogravure and lithograph) requires a groundwood with a high percentage of fines, chiefly fibrilplasma. For papers requiring a high bulk and high absorbancy (e.g. offset printing), a medium fines content, with the fines being largely flour, is advantageous and it is easier to make this groundwood from dry wood. Stiffness in the thicker papers (e.g. postcard) can be achieved with a high percentage of fibrilplasma while a high percentage of fibers together with flour-like fines contribute to softness and "lack of rattle."

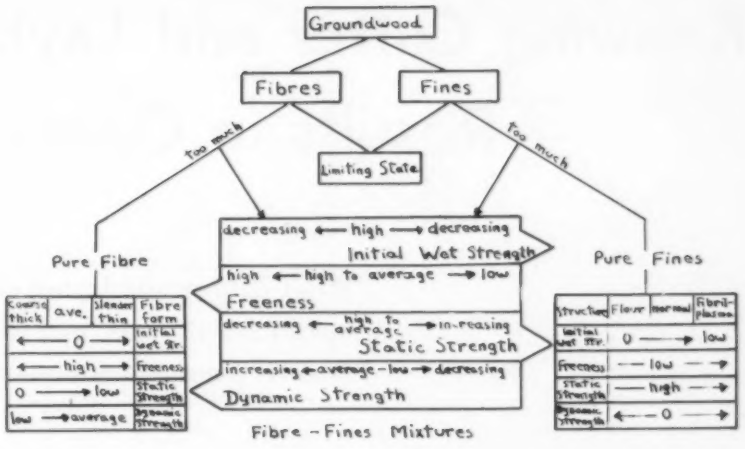

FIGURE 2—SCHEMATIC SUMMARY OF GROUNDWOOD TECHNOLOGY
(Summary of the technological effects of the mixing of Fibers and Fines)

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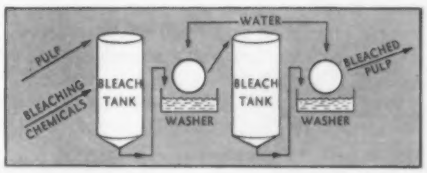

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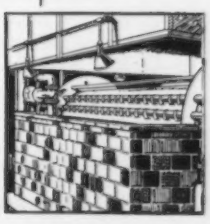

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Group Leader, Mechanical Research & Development
Champion Paper & Fibre Co.
Hamilton, Ohio

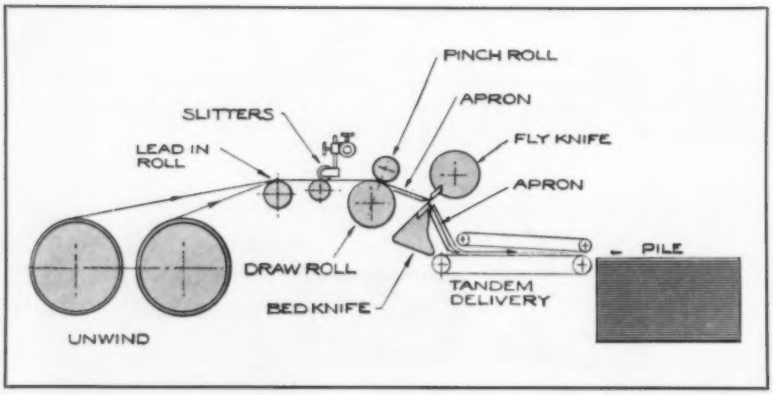

FIGURE 1—General arrangement of a simplex cutter with non-overlap delivery.

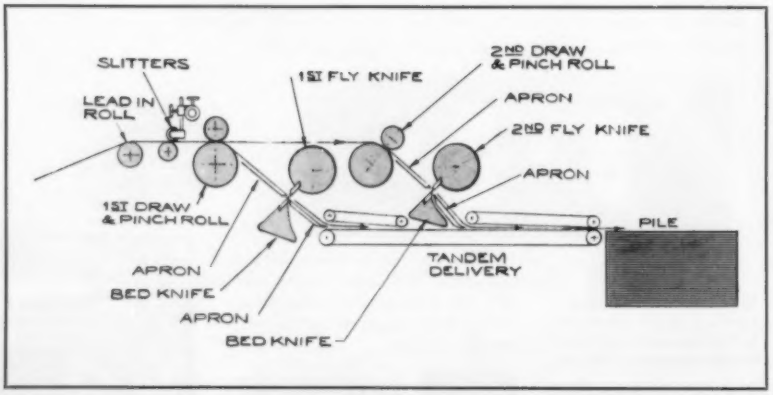

FIGURE 2—General arrangement of duplex cutter with non-overlap delivery.

High speed cutting of a web of paper into sheets of a given length is an essential of modern finishing practices. The rotary cutter meets all requirements of the high speed operation and in comparison to earlier techniques has many advantages, such as greater accuracy, cleaner work and greater security of operation.

Known in the trade as sheeting accurate cutting of a continuously moving web into sheets at high speed requires equipment which incorporates a number of important design factors. An understanding of these principles of design and of the functions of the component parts of a cutter and layboy is important in obtaining best results in this operation.

The general construction and arrangement of a cutter is almost invariably the same. The components, in order of sequence, or in relation to the running paper web, are: 1) Lead-in rolls (or regulating rolls), 2) top and bottom slitters, 3) draw roll and pinch roll, and 4) fly cutter and bed knife assembly, all assembled as one unit to a rigid frame (Figure 1). In the case of either a duplex cutter, or a triplex cutter, the general arrangement is the same except that another draw roll and knife assembly directly follows the preceding knife, and a part of the web is allowed to pass over the first or second knife assembly (Figure 2).

Lead-in Rolls

The lead-in rolls arrangement and their adjustment is an important function of properly delivering to the slitters and draw roll a continuous undis-

turbed web of paper. On the older type cutter, only one lead-in roll, either fixed or with vertical adjustment, was furnished as a standard part of the equipment. On some of the more modern high-speed cutters, two lead-in rolls with both vertical and horizontal adjustment are furnished (Figure 3).

The double-roll arrangement with two-way adjustment is a variable unit allowing the cutter tender to adjust and correct for curl and to adjust for equal tension of the web in cross-machine direction.

A more recent adaptation to the lead-in roll assembly is a rotating breaker bar. This bar is used in conjunction with one lead-in roll. The bar is a square tube with a journal at each end assembled to a round index plate. The bar can be revolved about the axis of the journals—thereby giving angular adjustment in relation to sheet contact. The whole unit can revolve about the index plates and can be locked into a position which will give the right amount of tension against the sheet for breaking or minimizing the curl.

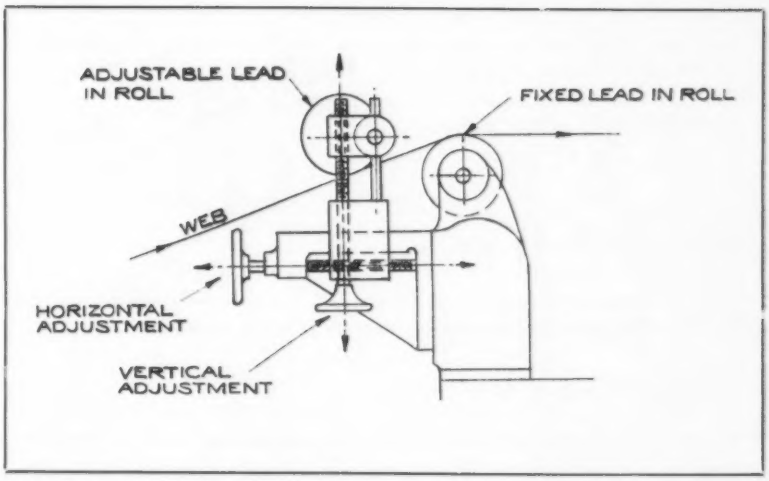

FIGURE 3—Adjustable lead-in roll arrangement.

Slitters

Two types of slitters may be used on a cutter. One, the score type slitter, creates considerable slitter dust which is transferred to the web and eventually is dispersed among the sheets in the pile at the layboy. The second, the shear type slitter, causes less of a dust problem, and its use is recommended. Such dust is transferred to the web. Eventually, it is dispersed among the sheets in the pile at the layboy.

The general construction of a shear-type slitter consists of a shaft-mounted top and bottom blade arrangement.

The bottom blades are of hub design with faces at each end ground concave. The bottom slitters are hardened steel inlay. They are mounted to a keyed or single-spline shaft. This shaft is driven so that the peripheral speed of the slitter is 25 per cent to 30 per cent faster than the sheet speed.

The top slitters are round blades ground at about 45° on the diameter. The blades are spring-loaded, and are driven by friction against the corresponding end faces of the bottom slitters. The spring-loaded hubs are shaft mounted to a clamp-type housing which is supported by a stationary cross-shaft.

For best results, proper setting and adjustment is important. After setting the bottom slitters to proper cross-machine dimensions, the top slitter blades should be brought into proper contact with them without the aid of their individual spring-loading mechanism. The top blades should be engaged 1/16 inch to 3/32 inch below the outside diameter of the bottom blades.

After this setting has been made, the spring mechanism of each top slitter hub should be engaged so that enough pressure will be exerted against the bottom slitter to rotate the top blade at the same speed.

The following errors can be the result of improper slitter adjustment:

Skips: top blade set less than 1/16 below the face of the bottom blade. Surface contact is less than recommended minimum—and operation becomes inefficient.

Slitter dust and slivers: frequently caused by top blade being set too far below the face of the bottom slitter, and an inadequate thrust load against the bottom slitter. Actually, when this improper adjustment exists, the web folds over the edge of the bottom blade. If the thrust load of the top blade against the bottom blade is too weak, dust, slivers or double-slitting occurs. In other words, the sheet is being slit in two different places by the top blade and also by the bottom blade. Other evidence of this adjusting error is a score mark just inside the trimmed edge.

When too much thrust load is exerted, misalignment exists between the two blades; and the top blade does not rotate freely, due to a binding action. Here the sheet is forcing itself through a stationary knife, or wedge, which results in a jagged trim edge and dust.

Draw Roll-Pinch Roll

The draw and pinch roll assembly, sometimes called the entry press, is usually located ahead of the knife, and serves as a press for holding the format. The operating speed of the paper in feet per minute as a constant, and the differential speed of the rotating knife, are directly related to the peripheral speed of the draw roll. The steel draw roll is driven directly from a pinion on the drive-in shaft of the main drive source. The pinch roll, usually rubber-covered and spiral-grooved, has either a mechanical, hydraulic, or air-loading mechanism located on bearing centers that can be adjusted for the proper amount of nip pressure. For best operating results, the pinch roll should be positioned about 15° off the vertical center of the draw roll. This location assures more wrap around the draw roll, and tends to reduce curl at this point.

In the case of duplex and triplex cutters, the press before the second and third knives, considered as an auxiliary press, is resolved into a driven carrier roll. The top roll is no longer a pinch roll; but, a driven carrier roll. Its covering should be more elastic than that of the main draw roll assembly. A brush roll or whipper-type roll made of felt stripping can be considered for this roll. In application, although an auxiliary press still exerts a draw, it no longer exerts an unwinding action which could develop wrinkles. The first patent on this arrangement was issued to Strecker in Germany.

Without exception, the paper web, after it leaves the main draw roll assembly and continues over the first knife to the second, or over the first and second knife to the third, should travel undisturbed in a horizontal path. Wraps of the paper web around fly rolls lead to the formation of wrinkles, and to errors in sheet dimensions.

If the sheet length error can be directed to the draw roll assembly, the source may be any of the following conditions:

1—Too much nip pressure will generate static. Static in the paper as it leaves the nip tends to attract or lift

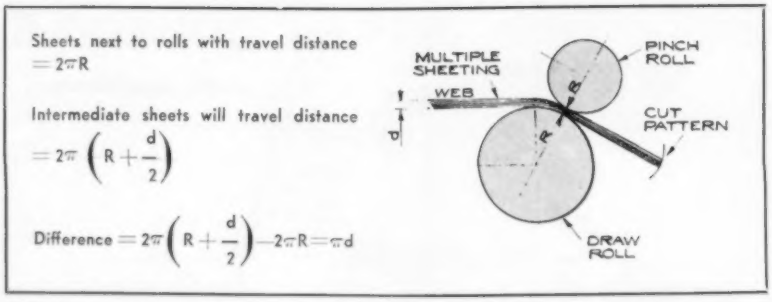
Sheets next to rolls with travel distance $= 2\pi R$
Intermediate sheets will travel distance $= 2\pi\left(R + \frac{d}{2}\right)$
Difference $= 2\pi\left(R + \frac{d}{2}\right) - 2\pi R = \pi d$
MULTIPLE SHEETING
WEB
PINCH ROLL
CUT PATTERN
DRAW ROLL

FIGURE 4—Exaggerated view showing contour of multiple web at nip.

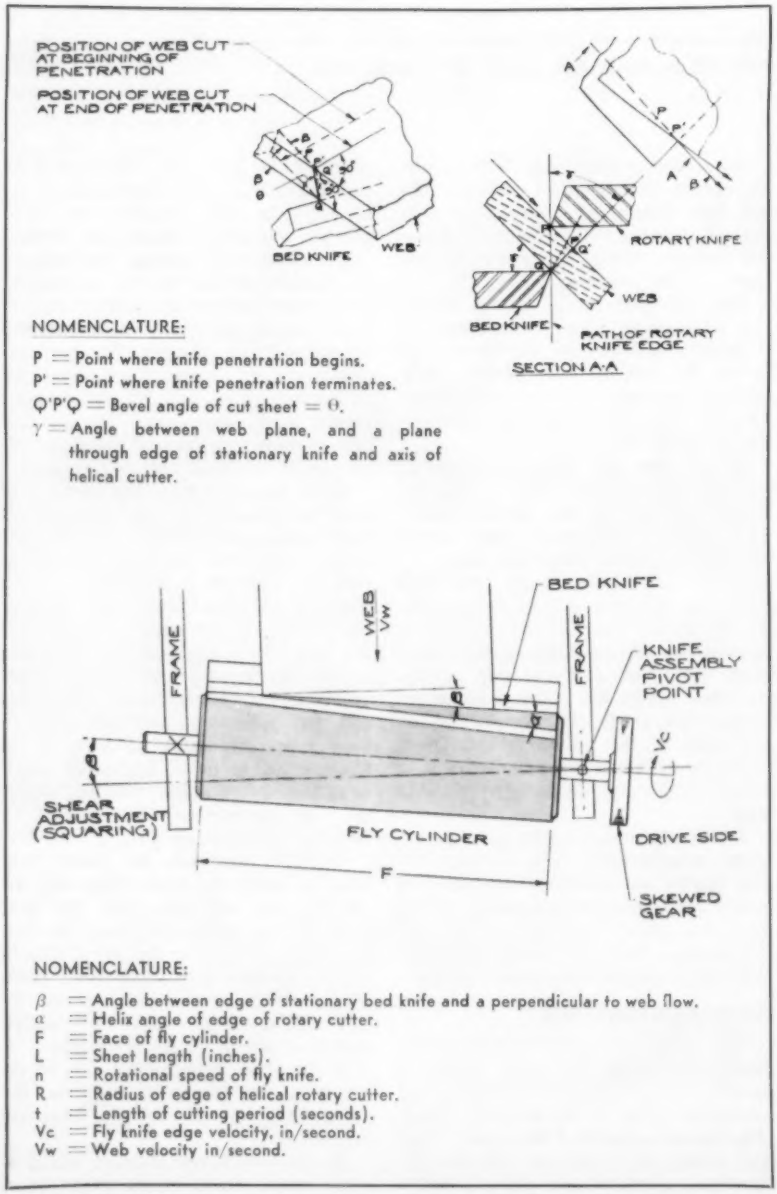
POSITION OF WEB CUT AT BEGINNING OF PENETRATION
POSITION OF WEB CUT AT END OF PENETRATION
BED KNIFE
WEB
ROTARY KNIFE
WEB
BED KNIFE
PATH OF ROTARY KNIFE EDGE
SECTION A-A
NOMENCLATURE:
P = Point where knife penetration begins.
P' = Point where knife penetration terminates.
Q'P'Q = Bevel angle of cut sheet = Θ.
γ = Angle between web plane, and a plane through edge of stationary knife and axis of helical cutter.
BED KNIFE
WEB Vw
FRAME
FRAME
KNIFE ASSEMBLY PIVOT POINT
SHEAR ADJUSTMENT (SQUARING)
FLY CYLINDER
F
DRIVE SIDE
SKEWED GEAR
NOMENCLATURE:
β = Angle between edge of stationary bed knife and a perpendicular to web flow.
α = Helix angle of edge of rotary cutter.
F = Face of fly cylinder.
L = Sheet length (inches).
n = Rotational speed of fly knife.
R = Radius of edge of helical rotary cutter.
t = Length of cutting period (seconds).
Vc = Fly knife edge velocity, in/second.
Vw = Web velocity in/second.

FIGURE 5—Geometry of shear and squaring adjustment of knife assembly.

the paper toward the pinch roll. The result is a bulge in the web between press and knife. In other words, the generated static retards the present linear speed of the web, and long sheet cuts are evident.

2—If the nip pressure is low, or inadequate wrap exists, slack in the web will develop before it enters the press; and short sheet cuts will be evident.

There is definite mechanical disadvantage in the design of the draw roll assembly. This is particularly true when multiple sheeting (set cutting). As indicated before, the linear speed of the web is equal to the peripheral speed of the draw roll; and, when single sheeting, the web speed is constant. When set cutting, even though the web is compressed, the sheets that are sandwiched between bottom and top sheets will travel faster. This is true because the arc of travel formed by the curvature of the rolls is greater at the mean or center of the web. As a result, the top and bottom sheets, or the sheets in direct contact with the roll, will be shorter than the intermediate sheets. The curvature assumed by the sheets is a factor which determines the linear velocity of the individual sheets in comparison with the other sheets as the whole layer is pushed through the knife (Figure 4).

Knife Assembly

The knife assembly consists of a stationary knife, known as the bed knife, and a rotating knife, known as the fly knife or fly cutter. The bed knife is housed in a bed bar. The bed bar is the main frame support for the bearings and fly cutter. The fly knife is housed in a knife bar and, in turn, is assembled to the rotary knife cylinder. The cutter severs the sheet by a shearing action of two knives. One blade moves past the other; and one knife edge is slightly inclined so that the cutting point gradually advances across the web. This angle of inclination is known as the incorporated shear. If no shear was incorporated, the web would have to stop intermittently to allow the fly knife to make the cut—in other words, a guillotine-type of cut. If too much shear is incorporated, there is the danger of lateral sliding of the web.

The amount of incorporated shear varies with cutter manufacturers specifications. The angle of shear will vary from a minimum of ¾ inch to a maximum of 3 inch per 100 inch of knife length.

Two Shearing Methods

Two types of shearing methods are used to get a complete intersection be-

tween bed knife and fly knife. One method gives a scissors-type cutting action, and obtains its shear by raising one end of the bed knife out of horizontal plane and curving the fly knife. The other method is to leave the bed knife in a horizontal plane and make the fly knife a helical curve on a cylindrical surface. This spiral shear gives a lawnmower-type cutting action and reduces knife contact across the web to a minimum (patent issued to Walter S. Aiken).

Knife Metal

In most cases, both bed and fly knife are hardened steel. However, a cast-iron fly knife is used in many instances on the spiral shear-type cutter. Cast iron on steel has a greater maximum allowable angle of shear than steel on steel. Because of the granular structure of cast iron, the edge of this type knife tends to hold the sheet rather than push the sheet away from the cutting point. However, the cast-iron knife is limited by its usage. Steel on steel works better on such grades as specialty board, tissue, condenser paper and coated paper. One of the great advantages of a cast-iron fly knife is that it is self-sharpening. A feature on the Clark-Aiken cutter is a micrometer adjustment which advances the fly knife toward the bed knife in increments of fractional thousandths. This mechanical device is self-sharpening. It adds much to the operating life of the knife.

Direction of the shear is best when the cut starts at the front side of the machine and terminates on the drive side. Vibrations caused by impact forces as knives intersect seem to diminish as the cut approaches the drive source.

Fly Knife Cylinders

On the earlier cutters, a crude nonsymmetrical rotating unit was used as the fly cutter. More recently, a cylindrical balanced casting has been adopted. This cylinder has a counterbalance located 180° from the knife bar.

It has been a common practice to tape a piece of kraft wrapper, or similar material, to the fly knife to help direct the oncoming web through the path of the knife travel. This is done to destroy the vacuum which builds up behind the rotary knife. The higher the r.p.m. of rotating knife, the greater the vacuum. This vacuum either causes the sheet to wrap the rotating knife or jam up on the delivery.

A fly knife cylinder with a series of circumferential rings cast between the knife bar and counterbalance bar will help direct the web through its path of travel. Large port hole openings located at 90° to the bars on each side of the cylinder and between the circumferential rings will reduce this vacuum.

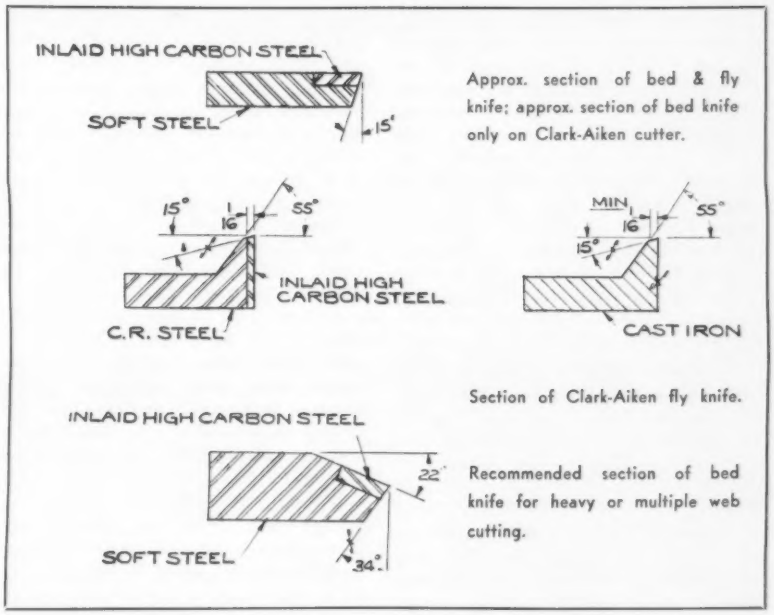

FIGURE 6—Bed knife and fly knife sections showing grinding surface.

Squaring Adjustment

With a rotary cutter the edge of the bed knife is not perpendicular to the direction of the webflow as might be expected (Figure 5). Because of the incorporated shear, a time element is involved from a point where the cut begins to a point where it terminates. As a result, the bed knife must be positioned at an angle to the perpendicular.

The squaring or shear adjustment (Figure 5), is the mechanism which compensates for this time element. It allows the bed knife to pivot about a fixed center on the drive side of the cutter, and advance on the front side of the cutter, from an exact perpendicular position in relation to the web, to a point toward the direction of the draw roll.

It is well to realize that the maximum length sheet that can be cut without stopping the web, or retarding its travel, is a length equal to the circumference of the fly knife travel. Sheets that exceed this dimension will vary in sheet length; and many times will be out of square.

Knife Installation

When steel or cast iron knives are installed, care should be taken to see that they seat firmly against the back and that all hold-down screws are tight. The cast iron or revolving steel knife is attached to a flexible bar, which, in turn, is positioned by a series of push-pull bolts. These bolts should be advanced by turning until the knives about touch at all points. The final setting should then be made, one at a time, starting with the front side bolt and proceeding one by one towards the gear end. Each bolt should be set so that pieces of newspaper will be cut at that point when the cylinder is revolved by hand. When all bolts have been set, the cutter can be operated at low speed, and cutting checked by holding a newspaper down into the knives from above, and allowing it to be cut off. Any spots which do not cut clean should be readjusted until they do.

Knives should be reground and reset in pairs (Figure 6). Using a flat honing stone on the cutting surface of the knives dresses off the jagged and wire edge. The cutter should be run, without paper, at a slow speed for about 45 minutes. This run-in period will lap the knives together and insure a clean cut edge on the sheet when production resumes.

As the web leaves the draw roll, its path of travel flows downward into the knife. This downward travel is known as the angle of approach. Since the web flow should be undisturbed, the squaring

adjustment accomplishes best results when it operates at the same angle as the paper travels. If this angle of adjustment is different than the approach angle, buckling is often encountered. Another important factor at this stage of the operation is the position and accurate setting of the apron board or slice between the draw roll and bed knife. The best apron board is of the collapasible type, mounted in the same angular position as the web. It stays in that position regardless of how far the squaring adjustment has advanced the bed knife on one side of the cutter.

Relative position of this apron to the edge of the bed knife is critical. The edge of the board should be tapered and positioned no more than 1/32 inch away from the knife edge. If the edge of this board is greater than 1/32 inch away, the sheet will not flow through the path of cut; and a jam up will occur. If the edge of the board is positioned right at the knife edge, or even slightly above, double cutting will occur—resulting in slivers and cutter dust.

The apron located under the bed knife should be adjusted so that a reverse curl does not exist as the sheet addresses itself onto the lower high speed tapes.

Drives for Cutters

Most modern day cutters receive their source of power from d.c. motor generator drives. Fifteen horsepower is adequate for operating an 80 inch to 100 inch cutter and layboy, and pulling as many as eight 36 inch diameter rolls off the back stands. On cutters of the size range mentioned, most of the horsepower is used to draw the paper through the entry press. Tests have proven that only seven horsepower is needed to operate the cutter and layboy.

For best results, the motor should be coupled directly to the drive in shaft. Belt drives are too flexible, and introduce fluctuating errors in sheet length. A positive gear train is driven from a pinion on the drive-in shaft. The train is connected to the draw roll and to a counter shaft, which is the dividing point between constant draw roll speed and variable knife speed. The principle involved in cutting sheets of different lengths in a drive that will vary the speed of the rotating knife in relation to the constant linear speed of the web. The accuracy in cutting sheets depends on the fact that, for each cut of the knife, the same exact length of paper is fed from the draw roll.

Controlling Knife Speed

There are various methods used to vary the rotating speed of the fly knife.

One method is the expansion pulley and belt drive from countershaft. Small changes in sheet length are accomplished by either expanding or collapsing the diameter of the pulley and adjusting a tension idler to take up belt slack. Larger changes in sheet length require changing pulleys and gears.

Another method involves the use of change gears for every different sheet length. With this type of drive, the change gear is part of the draw roll gear train. This change gear drives the counter-shaft on which is mounted a taper pulley. Close coupled is another counter-shaft with a taper pulley mounted in opposed position. The belt driving the second pulley, which transmits from its shaft the power and speed to operate the fly cylinder, rides under a tension idler and belt shifter. The change gear gives the sheet length within limits; the belt shifter arrangement, a vernier control, brings the sheet up to and holds it within a designated tolerance.

There are advantages and disadvantages to both of these drives.

The advantage of the expansion pulley type drive is that a great number of change gears are eliminated and sheet length changes are not time consuming. The disadvantage however is the inaccuracy in cutting due to slippage of the drive belt on the expansion pulley, or play in the expansion pulley which will cause variations in the r.p.m. of the fly knife and consequently, variation in sheet length. This disadvantage can be disregarded when short order runs are produced and the extra allowable trim is compensated for by production speed.

The advantage of the change gear drive system is that the direct and close coupled drive arrangement along with vernier adjustment gives an accurate sheet length with very close tolerance. The disadvantage of the drive is that a set up is involved for each change in sheet length.

Other variations in cutter drives include independent motor driven for both draw roll and fly knife, step gear arrangements and variable speed transmissions.

Drive Troubles

The cutter drive must be continuously resistant to both suddenly occuring and suddenly vanishing impacts. The drive must have transmission characteristics that are free from play, and must not oscillate. Gear mesh must have good contact throughout the entire drive train, except at the fly cutter where it is not possible.

As indicated before, the squaring adjustment pivots the fly knife and bed bar assembly on the drive side of the cutter frame. This, in turn, angles the fly knife gear out of the plane or gear mesh. A knife assembly with very little incorporated shear needs only a slight adjustment of the squaring device to make its correction; therefore, the drive is dependent on a sloppy gear fit. This, in turn, gives a back lash in gear mesh, resulting in sheet length variations. A knife assembly, incorporating a great amount of shear, needs a much greater amount of squaring adjustment. Here, a special skewed tooth gear and pinion are used to obtain more surface contact per tooth. The skewed tooth is cut at 1¼°.

The only construction that can eliminate this bad mesh condition is the combination of a perpendicular main shaft and a pair of bevel gears between this shaft and the knife drum. The drive in any position of the squaring device is then free of binding, and is always in good mesh. The use of the perpendicular shaft is the simplest solution; but unfortunately it is the most expensive. A patent on this drive was issued to Gerald Strecher.

The main drive source to the delivery and layboy is taken from the main drive-in shaft of the cutter. The bottom slitter shaft is usually driven from the draw roll.

Bearings

Roller bearings have been incorporated throughout all cutter bearing applications. Such bearings reduce lubrication requirements as well as the danger of soiling the paper to be processed.

Heavy preloaded Timken-type bearings should be adapted to the fly knife journals. This type of bearing eliminates cross direction float on the fly cylinder due to partial thrust loading.

Roller bearings should hold a sufficient supply of lubricant to last for long operating periods. Sealed bearings should be used. Otherwise, the waste in lubricant, and the penetration of dust and foreign material, would require frequent cleaning and refilling.

Frames

The main support frames for a cutter should be of a rigid cast design. A box-type or U-section casing should be considered. Cast iron frames of this section dampen out impact forces, and minimize vibrations set up throughout the machine. Accurate leveling and squareness of the frames are important when setting up the machine.

Layboy

The simplest type of delivery system

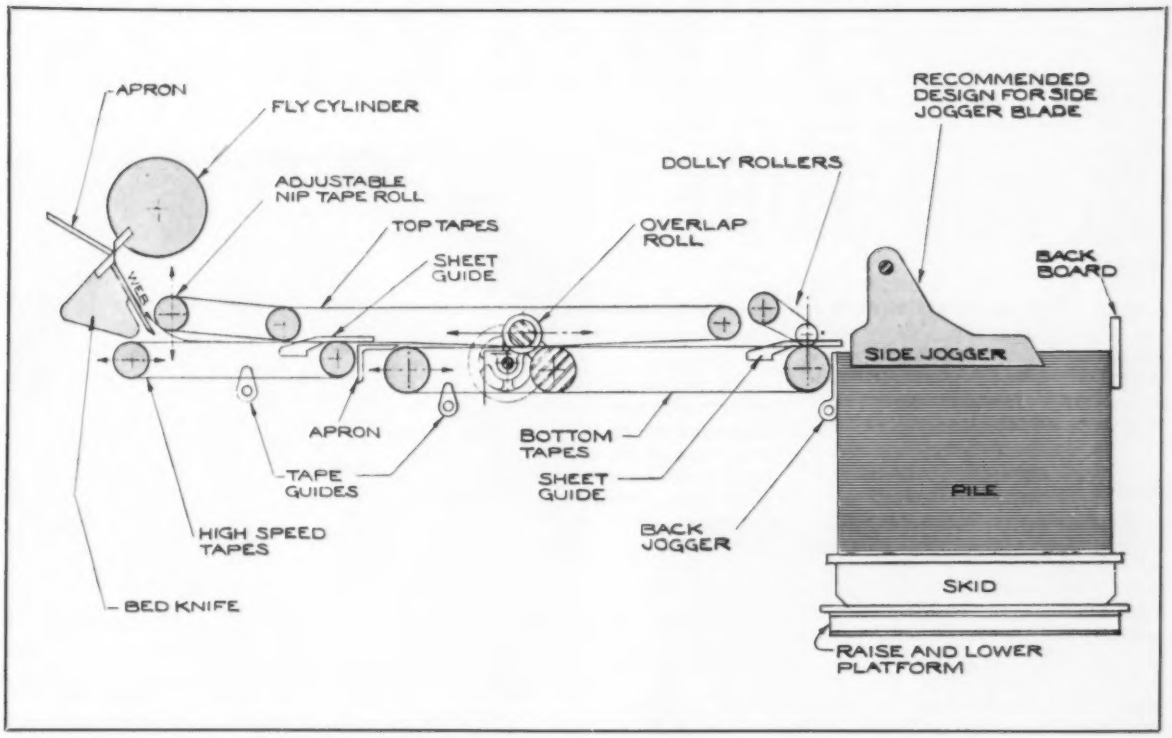

FIGURE 7—Typical arrangement of overlap delivery system.

is the tandem or non-overlapping layboy. Figure 1 shows a single tape system which starts under the bed bar and terminates at the layboy or piler. A set of auxiliary tapes narrower than these tapes, are positioned above them. They tend to control the sheet against flutter, but do not aid in conveying the sheet.

This tape system is driven at a speed faster than paper speed. By so doing, there is a separation of the trailing edge of the cut sheet, and the loading edge of the web, the instant the sheet is severed.

The layboy at the end of the delivery system is a raise and lower platform that collects the sheets and stacks them into a uniform pile. The lowering device, either manually or automatically controlled, keeps the level of the oncoming sheet just below the top of the last bottom tape roll. A back board is used to stop the sheet. A mechanical jogging system is used to position each sheet on the pile.

The limit of speed for rotating cutters is not the roll stand or cutting unit, but sheet delivery. In any operation, where paper is in motion, any hindrance to sheet travel is harmful to the paper. Sudden retardation in connection with rapid motion causes sheets to press together and to buckle. Such a hindrance occurs at the point where the sheets shooting onto the pile are slowed down by the back board. This design of layboy, therefore, would not permit a cutter to operate at maximum.

Overlapping Layboys

The overlapping layboy was designed to overcome this limitation. The first patent for such a layboy was issued to Maxson.

The principle of the overlap is to retard the speed of the sheets on the delivery system before they reach the pile and back stop. The sheets are slowed down before reaching their final stop, the retarding oir braking action being accomplished with the aid of an overlay roll. This roll causes the sheets to overlap and to strike the back board with less velocity.

The overlapping system actually is an addition to the tandem system (Figure 7). On the overlapper the high speed tapes under the knife assembly are maintained, but their length is shorter. Also an apron separates the high speed tapes from the overlapping tape system. Bottom tapes are slowed down. Top tapes, which control the sheet, straddle the overlap roll.

The overlap roll is mounted on the horizontal side frames which connect the layboy to the cutter. The position of this roll is adjustable, forward and back, by means of a rack and pinion arrangement. Proper setting for overlapping the sheets is dependent upon the braking position of this roll and the speed of the bottom tapes.

Sheets should begin to overlap on the apron, and their velocity slowed down, so that by the time they reach the pile, at least 60 per cent of the bottom sheet is overlapped by the top.

It is good design to incorporate a variable speed transmission in the drive to the high-speed tapes, and also in the drive to the bottom tapes of the overlap. With this type drive, the operator can regulate the separation between cuts on the high-speed tapes, and adjust speed on the lower tapes so that the overlap begins on the apron.

A very short tape system operated at high speed is located at the end of the top tapes. These short tapes drive dolly rolls, or kick off rollers, which are allowed to rest on the top face of the last bottom roll. These kick off rollers rotate about 10 per cent faster than the bottom tape roll. They introduce added momentum to the sheets —which is particularly helpful when shooting a long length sheet out over the pile. In order to eliminate scuffing, these rollers should be of lightweight material and should exert a minimum amount of pressure on the sheets.

Sheet guides are used to control the sheets along their path of travel while

being conveyed by the tapes. Flat guides placed about one inch in from the sheets' edges should be located at the apron. The velocity of the leading edge of a sheet at this point is much greater than the velocity of the trailing edge of the preceding sheet which has already been retarded in speed. For this reason, the flat guides give the leading portion of a sheet enough rigidity to carry over the trailing edge of the preceding sheet.

Sheet guides, with a concave section, are placed just ahead of the trailing edge of the pile. These guides transform the flat sheets into curved sheets. This gives the sheets the rigidity necessary to allow them to travel by their own momentum to the back board.

Spattering the Sheets

The next operation performed at the layboy is that of "spattering" the sheets. In order to build up the sheets on a skid in an even and uniform pile, a mechanical jogging arrangement is utilized. The back joggers are vertical bars with a pendulum action. Having a stroke of about ½ inch, they move between vertical stationary bars. When the sheet comes to rest, the trailing edge should be against the stationary bars. The jogger bars then ease the sheet against the backing board.

Side joggers, which serve to make a straight-sided, uniform pile, are of many shapes and forms. The side joggers that do the best job are made of flexible sheet metal, and are long enough to "spatter" at least 50 per cent of the sheet length. Position of the stacked paper in relation to a side jogger is very important. If the pile is built up too high above the bottom edge of the jogger, the jogger no longer "spatters" the sheets but rather tries to move a large segment of the pile with the blade.

An independent variable speed motor drive permits the osciliating speed on a jogger to be varied. Different grades handle in an unlike manner. Static and relative humidity conditions also change their controllability. Therefore, speed and length of stroke must vary to suit the condition.

Setting-up the Layboy

Setting up for a run on an overlap layboy should be done with utmost precision and care. The position of sheet guides should conform with position of the slitters. If one of the edge trim slitters is positioned in a permanent position, all of the sheet guides, tape guides and joggers relative to this position can remain set. All of the parts that is necessary to change because of different sheet widths can be located from those parts already permanently set. If the operation is for multiple piling, the guides at the end of the conveyor should be positioned so that a separation of at least ½ inch is evident between piles. This space is the minimum allowable for efficient operation of side joggers.

The most troublesome place on a layboy is where the leading edge of the sheet enters the nip between top and bottom tapes. The first top tape roll should have a vertical adjustment so that the nip can be opened or closed depending upon the curl of the incoming sheet.

An overlap becomes troublesome if proper attention is not given to the alignment of its corresponding parts with those of the cutter. This arrangement works correctly and reliably only when tapes, bearings and settings are permanently maintained.

Accessories

Accessories that can be added to the cutter and layboy for more efficient operation include:

1—Air blast and air doctors located at strategic points such as: where the web enters the knife; where the sheet enters the top and bottom tape nip; and at the back end of the pile.

2—Static eliminators, having a high voltage discharge emanating from metal points, ionizes a zone of air through which the paper travels and eliminates static adhesion. Troubelsome areas where static is generated are at the entry press nip, at the apron on the delivery system, and at the pile near the back jogger system. Cooling arrangements, such as spray nozzles, etc., can be used, providing they do not impair the paper finish.

3—Scale markers on the slitter shaft and side jogger drive shaft assure fast setting of slitters and joggers in relation to each other. A scale marker on the side of the conveyor frame indicating in inches of sheet length, is a definite aid in setting the overlap roll to correct position.

4—Ream counters and markers adapted to the machine to give mill ream or full ream count greatly reduce direct labor costs. The injection of markers can be either in the side or back of the pile.

5—Graphite-impregnated leather strapping suspended above the fly cylinder, contacting the knife at each revolution, will keep the knife honed and free of dust and foreign matter.

6—A bevel-edge apron board preceding and in contact with the bottom slitters will allow the web to be at the same tangent for all slitter positions.

Any arrangements to assist in sorting paper are worthy of consideration.

Roll Stands

Through the years the principal arrangement of the rotating cutter between roll stand and layboy, in general, has been retained. However, there have been some recent developments which include automatic and double roll stands.

One of the developments in roll stands is the use of a turntable with multiple roll stands. Having a common axis, these can be used as one stand with a double number of rolls. If used as a double stand, one set of rolls is being furnished; while the other set is being cut. Various combinations of roll threading can be adapted to the turntable, providing the number of rolls is not so great that the diameter and weight load is unreasonable.

Another arrangement includes two stands in a space behind the cutter, that move side by side, perpendicular to the axis of the cutter. Provision also may be made for two individual consecutive stands, one stand moving with the axis and one stand being perpendicular to the axis of the cutter. Another arrangement uses three individual consecutive stands which serve two cutters. One of the three stands, moving on an axis perpendicular to the web, serves both cutters. The other two stands move back and forth with the axis of each of the cutters.

The most recent contribution is the cutter unwind stand that allows top rolls to be loaded while bottom rolls are fed to the cutter, and vice versa.

Which of the various arrangements is best depends on the space available, the size of the rolls, and number of stands required. Where large drum stands are involved, the Strecker design moves the cutter before two stands, erected side by side.

It is well to realize that better knowledge of the operating components of the cutter and layboy means more operating efficiency. Have you ever stopped to realize what the cost savings per year in your mill might be if trim size was reduced ⅛ inch on four sides of every sheet cut; what your savings might be if broke due to curl, static jam-ups, cutter dust, off square sheets and folds were reduced only 30 per cent. These potentials can be gained if you understand operating principles, and know where and what to look for when trouble or errors occur.

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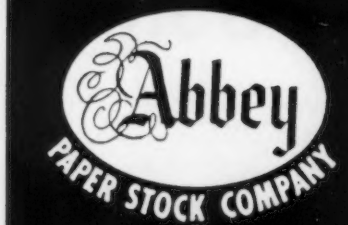

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Bleached Gw'd.	$97.50/100.00	$97.50/100.00			
Kraft, Blchd.	157.00/ —	160.00/162.50	$157.00/162.50*		$157.50/ —
Kraft, Blchd. Hdwd.	152.00/ —		$137.00/ —		
Kraft, Semi-bleached	140.00/ —	140.00/ —			
Kraft, Unbl.	117.50/125.00	125.00/130.00	†125.00/130.00	125.00/ —	
Sulphite, Blchd.	155.00/ —	155.00/ —	*155.00/ —	*155.00/ —	155.00 —
Sulphite Bl. Hdwd.	150.00/ —				
Sulphite, Unblchd.	135.00/ —	135.00/ —	†135.00/ —	*130.00/ —	
Sulphite, Unb'l. Gl'sn		134.00/ —	†134.00/ —		
Soda, Blchd.	147.00/150.00	150.00/ —			

‡ On Dock Atlantic Ports. * Freight allowed. † Varying Freight Allowances

NEW YORK RAG MARKET

New Domestic Cotton Cuttings
Delivered Mill Basis
PRICES NOMINAL

	Per 100 lbs.
No. 1 White Shirts	$13.50/$14.00
No. 1 Unblchd. Muslins	16.00/ 16.75
Blchd. & Unblchd. Underwears	15.00/ 15.50
No. 1 Light Silesias	7.00/ 7.50
No. 1 Light Blue Overalls	7.25/ 8.00
Percales	6.00/ 6.50
No. 1 Light Prints	5.00/ 5.50
Suntan Khakis	5.50/ 6.25
Cottonades	3.25/ 3.75
No. 1 Washables	2.50/ 2.75

Old Domestic Cotton Rags

(Prices to Dealers, f.o.b. Ship. Pt.)

	Per 100 lbs.
Mixed White	$3.00/$3.25
Cotton Pants & Overalls	2.00/ 2.25
Twos and Blues, Repacked	1.50/ 1.75
No. 2 Roofing	.60/ .70

COTTON LINTERS

Memphis Market
f.o.b. Oilmills

Week Ended November 25	For 100 lbs.
Grade 1 n.a.	
2	$9.00/ $8.75
3	8.25/ 7.75
4	7.50/ 6.75
5	6.25/ 5.75
6	5.25/ 5.00
7	4.75/ 4.50

1 cut—felting

*Based on 73% cellulose.

Old Rope & Bagging

(Prices to Dealers, f.o.b. N.Y.)

	Per 100 lbs.
New Burlap Cuts	$5.75/$6.50
Scrap Burlap	4.50/ 5.25
Australian Wool Pouches	5.25/ 5.75
Gunny	5.50/ 6.25
No. 1 Domestic Manila Rope	7.75/ 8.25
No. 1 Foreign Manila Rope	6.25/ 6.50
Domestic Sisal Strings	4.25/ 4.50

WASTE PAPER MARKET

Mill Prices, f.o.b. Trucks Shipping Point — Includes Brokerage

These quotations are a partial indication of the price range on volume tonnage in each market on the date specified, as gathered from major dealers. SPECIAL PACKINGS AND SPOT TONNAGE NOT INCLUDED. Prices nominal.

	New York	Boston	Chicago	Los Angeles
	November 25	November 25	November 25	November 25
No. 1 Mixed Paper	$4.00/ 6.00	5.00/ 7.00	4.00/ —	12.00/ —
No. 1 News	13.00/ 15.00	14.00/ —	14.00/ —	11.00/ —
Overissue News (Lg. size)	16.00/ 18.00	12.00/ 14.00	19.00/ —	13.00/ —
Mill Wrappers	11.00/ 13.00	12.00/ 14.00	7.00/ —	13.00/ —
Old Corrugated Containers	24.00/ 25.00	20.50/ 21.00	27.00/ —	18.00/ —
Super Resorted Kraft Paper	30.00/ 35.00	35.00/ 42.50	35.00/ —	45.00/ —
New Double Kr. Ld. Corr. Cuts	25.00/ 30.00	35.00/ 40.00	40.00/ —	30.00/ —
(Semi-chem. medium)	45.00/ 50.00	45.00/ 50.00	45.00/ 50.00	35.00/ 45.00
New 100% Kraft Corr. Cuts	50.00/ 55.00	50.00/ 55.00	55.00/ —	40.00/ —
New Br. Kraft, Env. Cuts	65.00/ 70.00	70.00/ 75.00	55.00/ —	45.00/ 50.00
New Br. Kr. Bag Waste Prntd.	55.00/ 60.00	55.00/ 60.00	50.00/ —	45.00/ 50.00
New Br. Kr. Bag Waste Unprintd	60.00/ 65.00	65.00/ 75.00	65.00/ —	45.00/ 50.00
No. 1 Groundwood Shvs.	25.00/ 30.00	20.00/ 30.00	16.00/ —	25.00/ 30.00
White Newsblanks	50.00/ 55.00	52.50/ 57.50	40.00/ —	55.00/ —
No. 1 Soft White Shvs.	55.00/ 60.00	60.00/ 65.00	60.00/ —	— / —
Super Soft White Shvs.	65.00/ 70.00	75.00/ 85.00	70.00/ —	— / —
Hd. White Shvs.	90.00/ 95.00	100.00/110.00	90.00/ —	85.00/ 90.00
Hd. White Env. Cuts	115.00/125.00	120.00/130.00	100.00/ —	100.00/110.00
Col. Tab. Cards	50.00/ 60.00	55.00/ 62.00	47.50/ —	32.50/ —
Manila Tab. Cards	60.00/ 70.00	70.00/ 75.00	65.00/ —	65.00/ —
No. 1 Col. Ledger	30.00/ 32.00	30.00/ 35.00	40.00/ —	22.50/ —
White Ledger	45.00/ 50.00	50.00/ 55.00	52.50/ —	35.00/ —
Mixed Book & Mag.†	18.00/ 20.00	19.00/ 20.00	12.00/ —	— / —
No. 1 Books‡	25.00/ 27.00	22.00/ 24.00	27.50/ —	— / —

† Includes Time & Life; no coarse groundwood. ‡ Not to exceed 10% of groundwood.

TECHNICAL BOOKS FOR THE PAPER INDUSTRY

UNIVERSITY OF MAINE LECTURES ON PULP AND PAPER MANUFACTURE

SERIES NO. 2

Edited by Prof. Lyle C. Jenness and Prof. John Lewis

A Valuable Textbook for the Paper Industry. Complete Lectures as given at the University of Maine by men of practical experience. Three hundred and seventy-three pages of up-to-date material covering a broad field in pulp and paper making including many fine illustrations and diagrams. Price **$7.50**

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Presents complete procedures for plant maintenance on all paper and pulping operations. Fills a definite need for those interested in improving maintenance procedures and reducing costs. Well illustrated, many charts, tables and graphs are included. 126 pages. **$2.50.**

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Is both a valuable textbook for the greeting card industry and an entertaining, informative volume for all readers. Mr. Chase's present work is an expansion of his original text published 30 years ago and still recognized as the only comprehensive record of this, a flourishing segment of our industry.

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Prepared by a Staff of 52 Specialists.
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Here is all the data you need to select materials for any given purpose in any field of engineering.
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Their Sources, Production and Utilization
549 pages, illustrated. Price **$8.00**

PULP AND PAPER MILL INSTRUMENTATION

By E. J. Cole and M. Todd. Appendix by R. B. Lundy.

The first book ever published devoted solely to this subject, it covers the basic principles of automatic control and measurement, and the application of instruments to all pulp and paper processes. 117 pages. Clothbound. **$3.50.**

MODERN PULP AND PAPER MAKING

Revised and enlarged 3rd Edition, edited by John B. Calkin. Consultant to the Pulp and Paper and Chemical Process Industries.

Previous editions by the late G. S. Witham, Sr. Encompasses in a single volume the fundamental principles of modern pulp and papermaking. 558 pages. Price **$10.00**

PULP AND PAPER MANUFACTURE

Prepared under the direction of the Joint Committee on Vocational Education representing the Pulp and Paper Manufacturers of the United States and Canada.
J. Newell Stephenson, Editor-in-Chief. Published in four volumes.

Volume One—The Preparation and Treatment of Wood Pulp—1043 pages, 377 illustrations, 90 tables. Price **$10.00**
Volume Two—The Preparation of Stock For Paper Making—587 pages, 194 illustrations, 13 tables. Price **$7.50**
Volume Three—Manufacture and Testing of Paper and Board—945 pages, 450 illustrations. Price **$11.00**
Volume Four—Auxiliary Paper Mill Equipment—732 pages, 343 illustrations, 36 tables. Price **$9.00**

ATLAS OF COMMONER PAPER MAKING FIBRES

By F. D. Armitage. Published by Guildhall Publishing Co., London, England.

Designed for readers who are interested or employed in the scientific investigation of paper problems, this book collects under one cover details on the use of the microscope, identification methods, and photomicrography procedures. Includes photomicrographs of 37 papermaking fibres and illustrations for text material. 170 pages. Permanently bound. **$8.85.**

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MERCHANTS

Alling & Cory Elects President

Clifford L. Van Derbogart, formerly of Buffalo, has been elected president of the Alling & Cory Co., 138-year-old Rochester, N. Y., wholesale paper concern which operates a division in Buffalo.

Mr. Van Derbogart joined the company in Rochester in 1954 as assistant to the president and became a vice president and a director in August 1956. He formerly was vice president and a director of the Niagara Lithograph Co. of Buffalo.

Mr. Van Derbogart succeeds Thomas R. White, president since 1955, who was elected chairman.

B & H Sold for $20,000

The B & H Paper Co., wholesale paper supply house in Springfield, Mass. for 40 years, has been sold to William Frank, until a few months ago vice president of Frank Brothers Paper Co., of Springfield.

The sale was made by Elias A. Bellas, sole owner, who organized the business in 1917 in partnership with Peter Haron. The latter sold his interest to Mr. Bellas in 1933.

The new owner said he intends to continue the business under the present name and at the original address, 24 Fort St.

The purchase price was said to have been in the neighborhood of $20,000. Harris M. Cohan was the broker, representing both parties.

Mr. Bellas said he plans to retire from active business. Mr. Frank has long been identified with the wholesale paper business and is well known in the trade.

Marquardt Named Orgler Representative

Henry F. Marquardt Co., 3701 N. Broad St., Philadelphia, Pa. has been selected as the Orgler Envelope Co.'s representative for the states of Pennsylvania, Delaware and Maryland. Orgler has been a leading manufacturer of envelopes for over 50 years.

Smith Named Westvaco Distributor

West Virginia Pulp and Paper Co. has appointed W. H. Smith Paper Corp. of Albany, N. Y., as a distributor of Westvaco business papers.

If You Missed...

any of these articles which appeared in our November issues, you should have your own subscription to *Paper Trade Journal.*

Neutral Sulphite Process at Finch, Pruyn

Many Changes and Improvements at M&O Mills This Year

What's New in Sizing?

Chemigroundwood Pulp from Small-Size Timber

New Recovery Plant at Halifax Has Many Interesting Features

In-Plant Conservation—What It Means and What We've Done About It

Recent Developments in Felts for Paper Machine Suction Transfer

Bull Screening Groundwood Pulp and Refining of Coarse Rejects

Downingtown Expansion Features New Cylinder Board Machine

Unique Features of Powell River Woodhandling System

How Some Typical Modern Grinder Rooms Are Arranged

Successful Installation of High-Yield Sulphite Plant at Ste. Anne Paper

A Brand New Papermaking Fiber

Bleach Plant Major Feature of Second Expansion at Elk Falls

Operating Experiences in a Neutral Sulphite Semichemical Mill

Manpower Requirements in Groundwood Production

Pioneer Glassine Producer Modernizes

OBITUARIES

Grant Richardson, 61, assistant vice president and manager of sales at Hammermill Paper Co., Erie, Pa. died November 16.

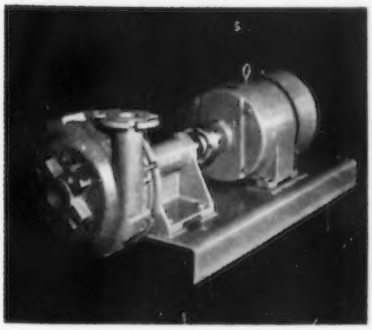
Mr. Richardson's first Hammermill job was as helper on the finishing room cutters. He moved into sales work in 1919, became Hammermill's Eastern District sales manager and export manager in 1932, and was promoted to assistant vice president and manager of sales in 1948. During World War II he was in Washington, D. C. as director of the Paper Division, Forest Products Division, War Production Board.

Albert Mine, 55, a packaging engineer for Milprint Inc., Philadelphia, died November 21 at Lankenau Hospital.

T. Alfred Rowlands, 63, Auburn, N. Y., a sales representative for the Waterbury Felt Co., Skaneateles Falls, died unexpectedly in Auburn Memorial Hospital November 19 following a heart attack.

Arthur L. Thomas, 57, passed away November 9 at the St. Louis Hospital, Berlin, N. H., following a long illness. He was employed by Brown Co. for 30 years and prior to his illness he was safety supervisor.

NEW EQUIPMENT AND SUPPLIES



High Speed Slurry Pump Abrasion Resistant

A new medium-range, high speed slurry pump—known as the Type BA—has been introduced by Morris Machine Works for handling suspensions of silt, sludge, lime or chemical process slurries. The pump, which is an extension of the Morris line of heavy duty, low speed pumps is especially designed for pulp and paper, chemical, or other industries where both abrasion resistance and high speed are desired.

Built in 1, 1½, 2, 3, and 4 in. sizes, the BA pump is available in cast iron, Ni-hard or stainless steel. Easy to dismantle and reassemble, this new pump features a renewable suction liner and semi-open impeller. It combines simplicity of design with structural strength and modern principles of hydraulic engineering.

Further information about the BA series, including drawings of the new pumps, may be obtained by writing for Bulletin 188 to Morris Machine Works, Baldwinsville, N. Y.

Heavy Duty V-Belt Eliminates Whip

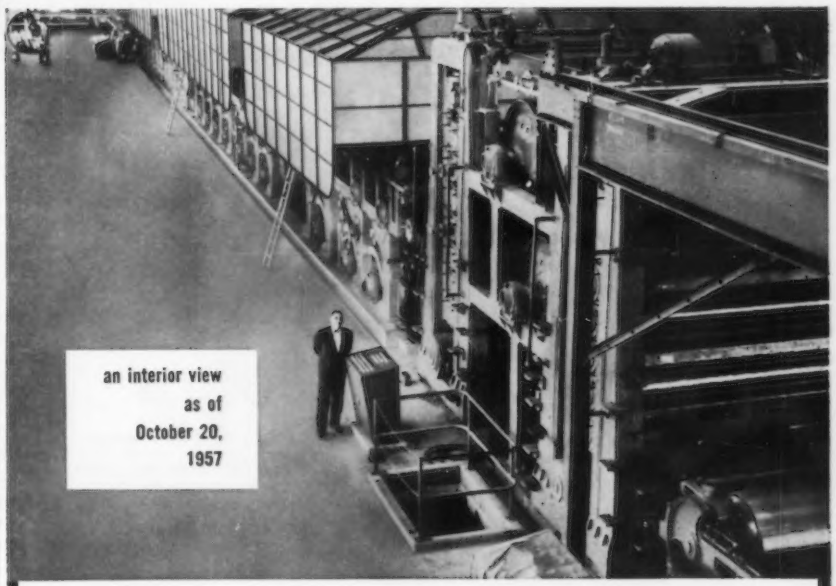
A new V-belt construction, developed especially for use on long center industrial drives, has been announced by Manhattan Rubber Division of Raybestos-Manhattan, Inc., manufacturers of an extensive line of industrial rubber products.

The new Condor LS Belt (Length Stabilized) features a precision proportioned construction reported to eliminate V-belt whip and similar causes of belt turnover and eventual failure common to conventional V-belt constructions on heavy duty, high powered, heavy industrial drives. Completely redesigned belt compression area and repositioned strength members give the new belt a degree of lateral and longitudinal stability never before possible with long center drives. Copy of an illustrated folder may be obtained by writing to Manhattan Rubber Division, Raybestos-Manhattan, Inc., Passaic, N. J.

Highly Accurate Stock Proportioning

Recently introduced, the new Sprout-Waldron/Cowan stock proportioner is said to provide consistent proportioning accuracy and accurate regulation of total flows. Other advantages are freedom from complex maintenance problems, simplicity of design, and economy in first costs and operation.

The Sprout-Waldron stock proportioner is a controlled set of highly accurate adjustable orifices, claimed to be the most consistently accurate type of stock flow control. The orifice characteristics are constant and directly proportional to area over a wide range



from Dierks Tree Farms to the Paper Trade

Mr. Carl Plumlee, general superintendent of the Dierks Paper Company, Pine Bluff, Arkansas, is shown standing beside the double calendar stack at the finishing end of the new plant's Black-Clawson paper machine.

Dierks Forests, Inc. owns one of the largest bodies of timberland in the South, and will provide a substantial portion of the wood for the new plant.

The plant will begin production of high quality unbleached kraft paper before the end of the year. Your inquiry is invited.

DIERKS PAPER COMPANY

Frank Johnson, Sales Manager
a division of Dierks Forests, Inc., largest producer of Southern Pine lumber
810 WHITTINGTON AVE. HOT SPRINGS, ARKANSAS

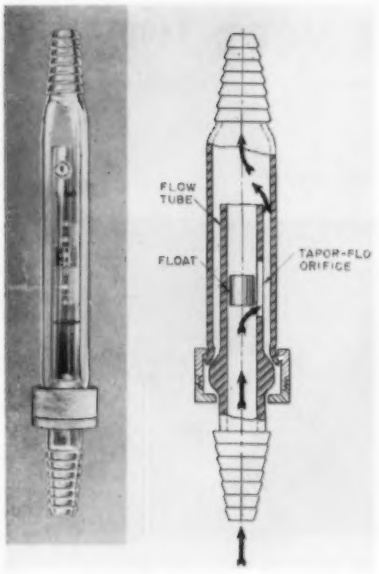
of flow. One orifice serves for each stock proportioned.

Available in two basic models, the overflow type and controlled level type, these units can be designed to proportion as many pulps as desired. For example, in a newsprint mill, broke and sulphite may be proportioned to the groundwood flow. The total flow is regulated by a hydraulic cylinder controlled by the machine chest level.

For more information write Sprout-Waldron & Co., Pulp & Paper Div., Muncy, Pa.

Flow Meter for Lab Work

A new flow meter developed by C-Mar Corp. for measuring low flow rates provides exceptional float stability under fluctuating line pressures. Known as the MB Series Tapor-Flo flow meter, this all-glass, variable area flow indicator is designed primarily for use in research laboratories, pilot plants, and bench-scale operations. An important feature is its outstanding stability, which results from the Tapor-Flo principle. The float lines out quickly without bobbing, to permit exact reading of flow value without visual averaging. Easy installation, maintenance, and range change are other important advantages of the Tapor-Flo design.



The Tapor-Flo meter operates as follows: As flow rate increases or decreases, a superfine-finished float rises or falls in a precision-bore glass tube, proportionately exposing more or less of a V-shaped orifice. Because this orifice is precisely shaped by ultrasonic impact grinding, float height is always directly proportional to flow rate. Flow value is therefore indicated on an evenly-graduated scale that is etched into the side of the flow tube. Conversion factors in table or chart form can be used to translate scale readings into flow rate units, or, in many cases laboratory technicians can work directly from indicated scale values without conversion.

Additional information on the Tapor-Flo meter is available from C-Mar Corp., 35 Euclid Ave., Manasquan, N.J.

Check Valve Has Internal Dampener

The Technocheck Valve with internal viscous dampener has been developed to serve where hydraulic and air shocks of magnitude are encountered. Its principal advantages are tight sealing and low pressure drop with no external dash pots, shafts, controls or linkages required outside the valve. No springs are used and functioning of the dampening device is positive.

The dampener consists of a cylinder filled with silicone fluid and containing a rotor. Design is such that valve mem-

Figures of the Week

PAPER PRODUCTION RATIO REPORT—American Paper & Pulp Assn. Figures

(Production as percent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

1957	Oct. 19 91.8	Oct. 26 93.6	Nov. 2 93.8	Nov. 9 89.7r	Nov.16 91.7
1956	Oct. 20 98.5	Oct. 27 100.1	Nov. 3 100.1	Nov. 10 99.4	Nov. 17 97.3

r Revised.

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1956	99.6	102.6	102.9	102.5	101.8	99.9	85.6	96.7	94.3	99.5	97.6	90.9	97.9
1957	94.2	97.0	97.1	94.0	94.6	93.3	75.6	90.5‡	85.8‡	92.4‡			

‡ Preliminary.

COMPARATIVE YEARLY SUMMARIES

	1950	1951	1952	1953	1954	1955	1956	1957
Year to Date	96.3	99.7	90.6	93.7	92.0	95.2	100.1	91.2
Year Average	95.8	98.0	88.6	92.6	91.6	94.9	97.7	

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

PAPERBOARD OPERATING RATIOS†

COMPARATIVE WEEKLY SUMMARIES

1957	Oct. 19 98	Oct. 26 97	Nov. 2 94	Nov. 9 94	Nov. 16 94
1956	Oct. 20 94	Oct. 27 97	Nov. 3 96	Nov. 10 95	Nov. 17 94

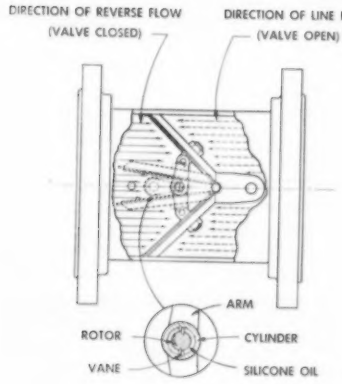
COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1957	91	94	94	92	93	91	72	94	91	97			
1956	100	100	99	100	99	98	77	95	89	96	93	84	94

† *Percents of operation based on "Inch-Hours" reported on a 6-day basis to the National Paperboard Association.*

SUMMARY OF PAPERBOARD STATISTICS—National Paperboard Assn. Figures

ITEM	THIS WEEK ENDING Nov. 16, 1957	LAST WEEK ENDING Nov. 9, 1957	CUMULATIVE TO DATE Jan. 1 to Nov. 16, 1957
% Activity	94%	94%	92%
	Tons	*Tons*	*Tons*
Total Production	290,265	287,763	12,545,082
Liner	105,144	100,548	4,325,960
Corrugating Material	48,330	47,446	1,925,374
Chip & Filler Board	5,539	5,046	238,225
Total Containerboard	159,013	153,040	6,489,559
Folding	51,341	51,044	2,304,244
Set-Up	11,213	12,112	513,422
Special Food Board	22,011	24,046	1,089,217
Other	46,687	47,521	2,148,640
Total Boxboard	131,252	134,723	6,055,523
Total Orders	*Tons*	*Tons*	
Received	240,710	281,322	
Unfilled End of Week	433,323	485,369	



bers, or the "butterfly", are linked to the rotor. The retarding effect is imposed on the valve members when the fluid is pumped through orifices in the cylinder.

Orifices are so arranged that flow from upstream permits members to open quickly to a point short of full travel. At this point, closing is resisted by fluid, movement becomes slow and shock is prevented. When reverse flow is imposed on the valve members, the opposite effect takes place.

Silicone fluid is selected for the dampening medium because of its flat viscosity curve providing uniform action under varying temperatures. Valves are currently in use in hydraulic systems where large volumes are handled under severe shock conditions. Technocheck valves are produced in sizes ranging from 4 in. to 36 in. in diameter and in a variety of metals and alloys. Various types of linings and trim are also used.

Write for Bulletin No. VD-2, Techno Corp., 16 W. 5th St., Erie, Pa.

Measure Flow Rates Accurately with New Pitot Tube

A new pitot tube—a compact, flowmeter primary element—is now available from the C-Mar Corp., Manasquan, N. J. Made of stainless steel, bronze, brass or monel, the C-Mar pitot tube can be used to measure flow rates of gases, water, and other liquids.

Requiring only a small opening for insertion into the pipe or duct, the C-Mar pitot tube is particularly useful in experimental engineering—for cut-and-try design work where a number of measurements must be made before system design is final.

Principal applications of the C-Mar pitot tube are: 1) where a temporary flow measuring installation is required, 2) for measuring flow on a permanent basis where the size of the pipe or duct is too great to make an orifice plate installation practical, 3) in test work, for measuring a number of different points in a line and for exploring flow-rates or velocity distribution in apparatus already built, and 4) for traversing a pipe or duct to determine the velocity distribution in the line.

A safety lock permits the C-Mar pitot tube to be secured in any position, providing safety at all times—even when running a traverse. This lock assembly also automatically positions the tube so that the impact opening always faces exactly upstream for maximum accuracy.

Differential pressure between the upstream and the downstream side of the C-Mar pitot tube is approximately 25 to 50 per cent greater than with conventional pitot tubes. As a result, the C-Mar tube is better able to measure low-velocity fluids. A differential pressure instrument can be connected to the pitot tube to measure differential pressure and indicate flow rate on a scale graduated in flow units.

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LIGHT WALL STAINLESS
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NEWS OF SUPPLIERS

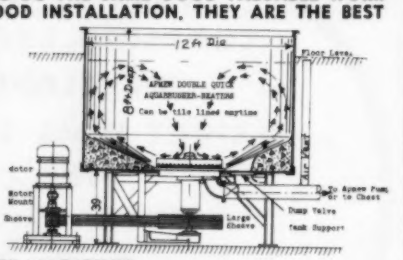
Black-Clawson Co. has complemented its line of refining equipment through acquisition of the Sutherland disk refiner, breaker trap and pressure washer business in the United States, Canada, and *certain overseas markets.*

Black-Clawson, in keeping with its policy of maintaining separate divisions each specializing in one group of pulp or paper mill machines, will center the sales and servicing of the Sutherland line in the Shartle Div., Middletown, Ohio, and Pandia Div., Hamilton, Ohio, which specialize in pulping and stock preparation respectively. Black-Clawson (Canada) Ltd. in Montreal will handle the line for customers in Canada.

HIGH WET STRENGTH (COTTON CONTENT) MAP PAPERS. **3,000 POUND BATCHES DEFIBERED AND BEATEN-OFF in *THIRTY MINUTES* using 100 H.P. Motor, in APMEW HIGH DENSITY (7.1%) DOUBLE QUICK AQUABRUSHER BEATERS. WE GUARANTEE THEM TO DO THE SAME GOOD VALUABLE WORK IN YOUR MILL with the USUAL GOOD INSTALLATION. THEY ARE THE BEST OBTAINABLE.**

ONE MILL SAVED: 150 H.P. DAILY ($7,500.00 YEARLY), THREE BEATER MEN ($9,000.00 YEARLY) FIBRE SHRINKAGE ($28,800.00 YEARLY) ALSO BEATS UP TWO HUNDRED POUND BATCHES or SMALL BATCHES WHEN NEEDED.

USUALLY USES ONE FOURTH THE POWER of Beaters and Pulpers. OBSERVE THEM WORKING.



DOZENS OF REPEAT ORDERS ALREADY. *QUICK DELIVERIES of ONE WEEK.* 363 PATENTS.

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CARTHAGE MACHINE COMPANY CARTHAGE, NEW YORK

Write for Bulletin 100A.

T. E. Moffitt

A. Wilcox

T. F. Willers

Hooker Electrochemical Co., Niagara Falls, N. Y., have elected Thomas E. Moffitt company president. He succeeds Bjarne Klaussen who will continue as a director and who had served for nearly a year beyond the company's normal retirement age of 65 by special request of the board. Mr. Moffitt had been a director and executive vice president since January 1956.

During the same board meeting, the directors also voted several other changes. Ansley Wilcox 2d, who has been secretary and general counsel, was in addition elected a vice president. Thomas F. Willers was elected a vice president and treasurer and will also continue as comptroller. Dennis A. Riordan, formerly treasurer, plans to retire. Mr. Willers, who had been assistant treasurer, succeeds him in this position. John F. Snyder retires as vice president but will remain as director and member of the finance committee. J. Clarke Cassidy, a director and former vice president, has been appointed to the finance committee, of which Edwin R. Bartlett is chairman. R. Lindley Murray continues as board chairman and chief executive officer.

American Cyanamid Co.'s Mobile, Ala. plant is expanding to include facilities for the production of wax sizes.

At present Cyanamid's Mobile installation produces alum, rosin size and sulphuric acid. The company's 24 strategically located plants producing chemical specialties for the paper industry make it a key supplier to that industry.

N. C. Gangemi

R. Marsh

D. T. Bixby

C. J. Petry

Acme Steel Co., Chicago, has appointed Charles J. Petry assistant to the chairman. He will devote his efforts toward coordinating and expediting the constructioin of new steel making facilities at Acme Steel's Riverdale location, and he will assume other related responsibilities both at Riverdale and at Acme-Newport Steel Co., Acme Steel subsidiary located in Newport, Ky.

De Laval Steam Turbine Co., Trenton, N. J., has named Donald T. Bixby assistant manager of its Standard Products Division. He has been sales manager of the division since 1955. Mr. Bixby joined De Laval in 1945 and served as a sales engineer in the Trenton and San Francisco offices. He was appointed sales manager of the Seattle district office in 1953.

Westinghouse Electric Corp. has appointed marketing directors for three of the company's major product divisions. S. F. Davies, marketing director, general products divisions; L. H. Loufek, marketing director, apparatus products; and R. M. Wilson, marketing director, defense divisions.

S. F. Davies joined Westinghouse in 1939 on the company's graduate student training program. He was appointed sales manager of the Micarta division, Hampton, S. C., in 1954.

L. H. Loufek, in addition to assuming the duties of director of marketing, apparatus products, will continue in his present post as manager of customer relations and retail syndicate operations.

R. M. Wilson joined Westinghouse in 1936 as a member of the graduate student training program. His most recent post has been in Pittsburgh as sales manager of the defense products divisions since 1954.

Pennsylvania Industrial Chemical Corp. has appointed Nicholas C. Gangemi director of research. He will maintain his offices at the company's research laboratories at Chester, Pa.

Prior to joining Pennsylvania Industrial Chemical in 1946, Mr. Gangemi was a research chemist for United Gas Improvement Co. He has been assistant director of research for PICCO since 1955.

Walter Kidde Engineers-Southwest of Houston, Texas, have appointed Ray Marsh as pulp and paper contract engineer.

Mr. Marsh joined the company in early 1951 shortly after the Houston office of Walter Kidde Constructors of New York was established. In March 1956, he was made chief project engineer.

N. J. Johnson

Z. A. Wise

Griffith Rubber Mills has named Norman J. Johnson president by the firm's board of directors. He succeeds Zina A. Wise, president of the firm from 1951 until his death last September 19. The directors also named Zina A. Wise Jr., son of the late president, to serve as vice president.

Mr. Johnson has been with Griffith Rubber Mills for 15 years. He was assistant treasurer from 1947 to 1951, when he became treasurer and assistant general manager of the firm. In 1954 he was appointed assistant to the president, and the following year became general manager. Earlier this year he was appointed executive vice president in addition to his position as general manager.

Zina A. Wise Jr., has been assistant sales manager in charge of the firm's sales activities with the pulp and paper mill industry for the past two years. He will continue as head of the sales staff for pulp and paper mill industrial products in addition to serving as vice president. He was formerly manager of sales activities of the firm's specialty line of rubber marine accessories, and has been employed in various manufacturing and management positions by the firm for more than ten years.

L. Bleakley

L. J. Wood

East Chicago Machine Tool Corp., East Chicago, Ind., has named Lindsay Bleakley general manager. He joined the corporation in 1950 and has been a prime contributor to the corporation's growth.

East Chicago Machine Tool Corp. specializes in contract manufacturing for heavy industry. The Balemaster Division manufactures, distributes and services a complete line of baling equipment.

Mr. Bleakley was born in Northern Ireland and emigrated to the United States in 1950 with his wife and two sons. Both of his sons have become engineers. For seven years prior to World War II, Mr. Bleakley served as personnel director for the Hugh J. Scott Engineering Co., Belfast, Ireland. During the war, he served in the R. A. F. as a navigator.

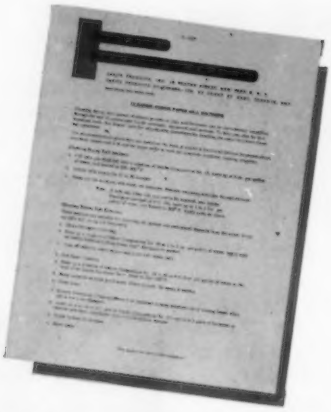
National Starch Products' Leonard J. Wood, paper development and service manager, won the 1957 T.O.C. Award of the Packaging Institute, at the Institute's 19th annual forum, October 28, 29 and 30.

Yale & Towne Manufacturing Co. has appointed George C. Lichty, active in all phases of industrial lift truck sales and service for more than 15 years, northwestern district sales manager for Yale lift trucks.

In his new post, Mr. Lichty will be in charge of Yale representative activities in Oregon, Washington, Idaho, Montana and the Canadian Provinces of Vancouver, British Columbia and Alberta.

He will make his headquarters in Salem, Oregon, at 985 Grand View Place.

Here are some



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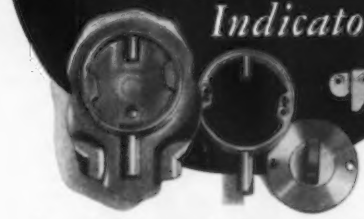

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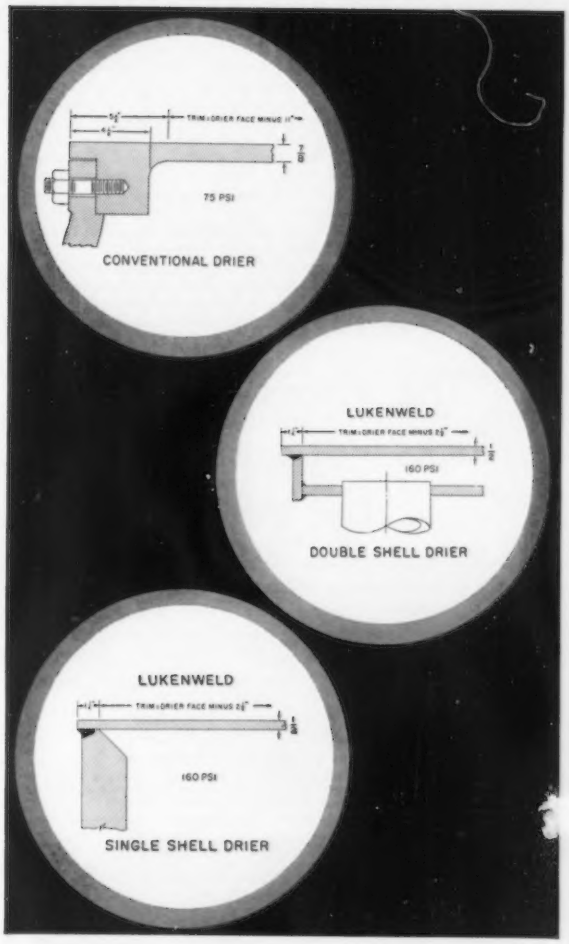

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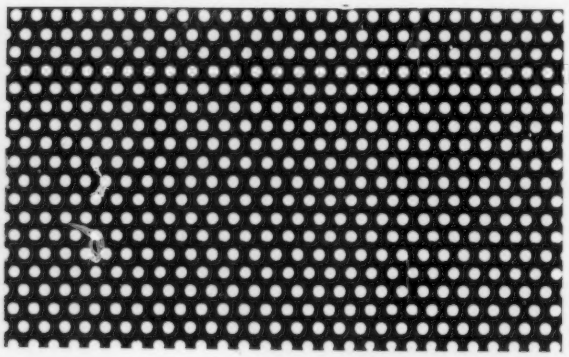

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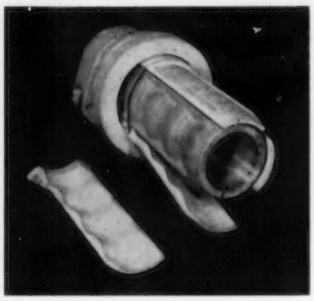

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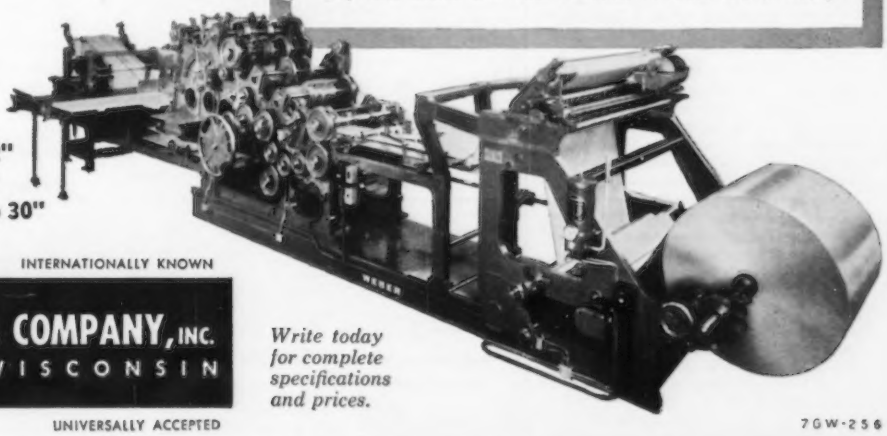

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D-9

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Write us regarding your requirements.

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While we strive for accuracy in preparing the above index which is purely a service to our readers, we cannot be responsible for errors.

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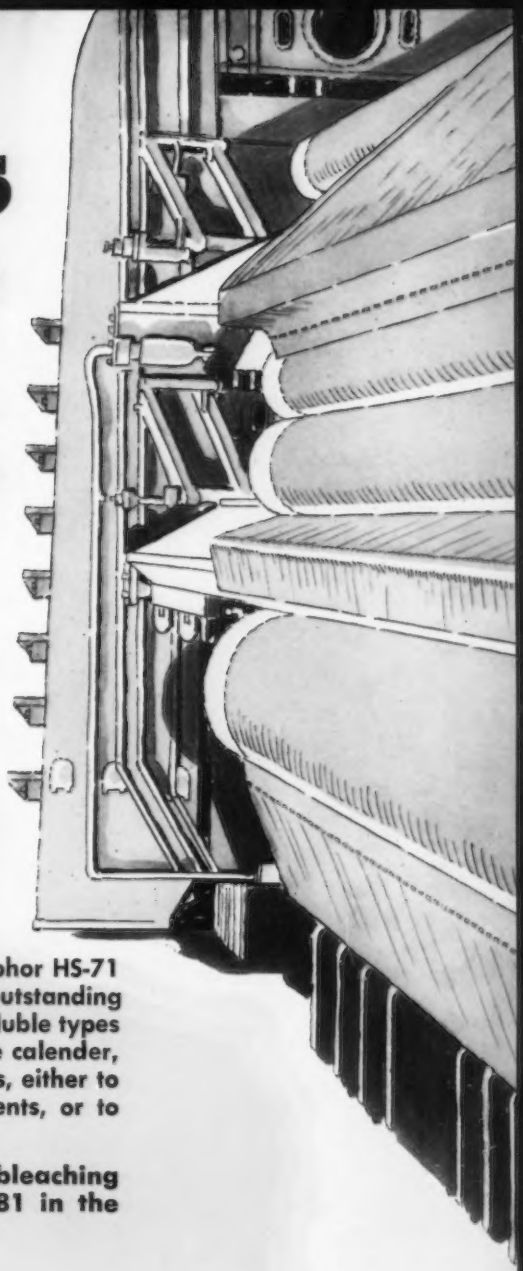

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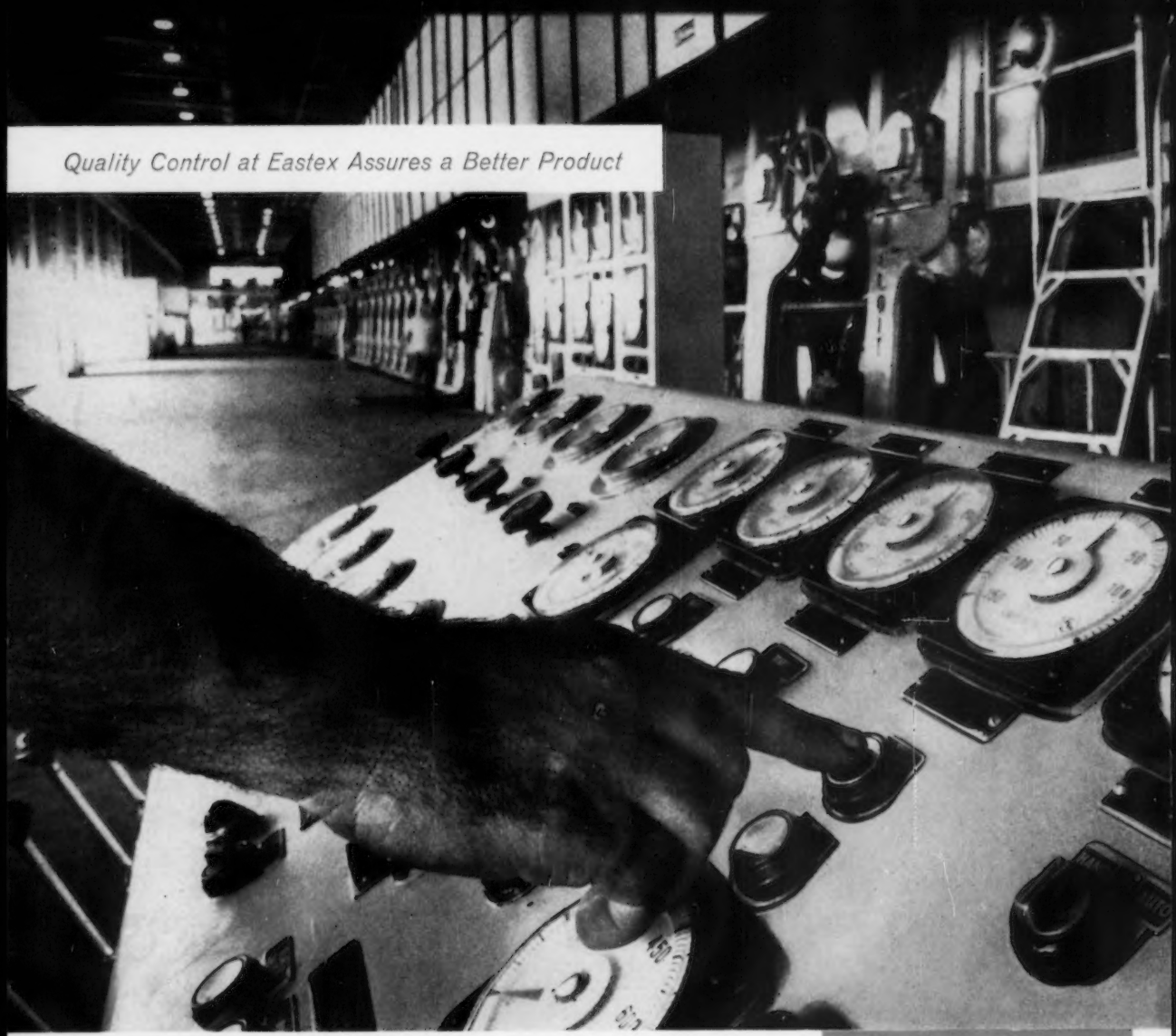

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